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December 21, 2018

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Subject: Final Basis of Design Report, Surrounding Properties
Old American Zinc Plant Superfund Site, Fairmont City, Illinois, Revision 1
WA No. 224-RDRD-B5A1, Contract No. EP-SS-06-01

Dear Sheila:

Enclosed please find the Final Basis of Design Report for the Old American Zinc Superfund Site, Revision 1, which was prepared to address contaminated soil located in the properties and alleyways surrounding the Facility Area.

Please contact me with any questions or concerns at 314-599-3414.

Sincerely,

CH2M

A handwritten signature in black ink, appearing to read 'Rachel Grand'. The signature is fluid and cursive, with a long, sweeping underline.

Rachel Grand
Site Manager

Enclosures:

Final Basis of Design Report, Surrounding Properties, Revision 1

Old American Zinc Plant Superfund Site
Fairmont City, St. Clair County, Illinois
Surrounding Properties Remedial Design
WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



December 2018



Professional Engineer Certification Statement

I certify that this document and all appendixes and attachments, as applicable, were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons that manage the system or of persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Name of P.E.: Matthew Gavin
Registration No.: 062-056650
Date: December 20, 2018

Matthew Gavin
12/20/18



EXP. 11/30/19

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Acronyms and Abbreviations

| | |
|-------------------|---|
| AOC | Administrative Order on Consent |
| ARAR | Applicable or Relevant and Appropriate Requirements |
| bgs | below ground surface |
| BMP | best management practice |
| BODR | basis of design report |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CFR | <i>Code of Federal Regulations</i> |
| CH2M | CH2M HILL, Inc. |
| COC | contaminant of concern |
| CQAP | construction quality assurance plan |
| CWA | Clean Water Act |
| EPA | U.S. Environmental Protection Agency |
| FA | facility area |
| FS | feasibility study |
| IDOT | Illinois Department of Transportation |
| IEPA | Illinois Environmental Protection Agency |
| ILCS | Illinois Compiled Statutes |
| mg/m ³ | milligrams per cubic meter |
| mg/kg | milligrams per kilograms |
| NPDES | National Pollutant Discharge Elimination System |
| OAZ | Old American Zinc |
| PCG | preliminary cleanup goal |
| PRP | potentially responsible party |
| RA | remedial action |
| RD | remedial design |
| RI | remedial investigation |
| ROD | Record of Decision |
| SWPPP | stormwater pollution prevention plan |
| TCRA | Time-Critical Removal Action |
| UDP | Unanticipated Discovery Plan |
| USACE | United States Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| XRF | X-ray fluorescence |
| XTRA | XTRA Intermodal, Inc. |

Introduction

The U.S. Environmental Protection Agency (EPA) contracted CH2M HILL, Inc. (CH2M) to prepare the remedial design (RD) for the surrounding properties near the Old American Zinc (OAZ) Plant Superfund Site, consistent with the Record of Decision (ROD) (EPA 2012). This final basis of design report (BODR) was prepared to address contaminated soil in properties and Village alleyways located in the offsite properties surrounding the facility area (FA), referred to as surrounding properties. The work was performed under Work Assignment No. 224-RDRD-B5A1 of Contract No. EP-S5-06-01. The work was completed in accordance with the *Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Remedial Design Work Plan* (CH2M 2017), the *Record of Decision, Old American Zinc Plant Superfund Site* (EPA 2012), and the *Remedial Design/Remedial Action Handbook* (EPA 1995).

1.1 Site Description

The OAZ Superfund Site is located in the Village of Fairmont City in St. Clair County, Illinois. The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east. The site also includes properties near the FA (surrounding properties), primarily in Fairmont City, as shown in Figure 1-1.

1.2 Site History

OAZ conducted zinc-smelting operations at the FA from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stock piles originally encompassed an area of 15 acres. The FA, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the FA until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to build up and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA cover an area of 125 acres with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Site investigations conducted at the site since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed a remedial investigation (RI) and feasibility study (FS) for the site in 2012 and identified contaminants in different media that included slag stock piles, ground slag that was used as fill material, and high metal concentrations in shallow groundwater in the FA. The impacted surrounding areas include residential, commercial, and vacant properties and village alleyways and drainageways that were contaminated with runoff from the facility. Ground slag was also transported to offsite properties by local businesses, residents, and the Village for surfacing village alleyways and used as fill material in residential properties (ENTACT 2012). Most of the impacted properties are located to the west of the site, with small pockets of trailer park and residential developments to the north, south, and east.

EPA, under the provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), conducted a Time-Critical Removal Action (TCRA) from 2002 to 2003. A total of 462 offsite properties were sampled during the TCRA, of which 209 properties were found to have lead concentrations above the Remedial Action Level of 400 milligrams per kilograms (mg/kg). Impacted soil was removed from 152 properties, with the remaining properties to be addressed under future remedial action (RA). Following the completion of the RI/FS in 2012, a ROD was issued by EPA detailing the selected remedial approach for the site. EPA entered into an Administrative Order on Consent (AOC)

with the potentially responsible party (PRP) in August 2014 to perform the RD work. The PRP was tasked with performing the RD work, and a draft final RD report (consisting of the report, selected drawings, but no technical specifications) was submitted to EPA in April 2016. Due to bankruptcy proceedings in April 2016, the PRP ceased performing additional work at the site. As a result, EPA assumed control of the site to complete the RD.

CH2M previously performed oversight at the OAZ site on behalf of EPA and was tasked with completing the RD activities under Work Assignment No. 172-ROBE-B5A1 (since April 2013).

1.3 Selected Remedy and Remedial Action Objectives

EPA's selected remedy for the site is Alternative 4A, as described in the ROD (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The selected remedy for the surrounding properties involves removal of source material (slag used as fill) and contaminated soil from the identified residential, commercial/industrial, vacant properties, or village alleyways above the applicable residential or commercial/industrial human health cleanup levels. The properties will be backfilled with imported fill that meets project specifications and restored to pre-excavation conditions. During the RA, excavated soil from the surrounding properties and alleyways will be consolidated within a 35-acre consolidation area located in the southern portion of the FA, which is part of the remedy at the FA. Depending on the RA sequencing, the excavated material may be staged at the FA for placement into the consolidation area at a later date.

Soil removal and transport to the FA will be performed as follows:

- Soils from residential, commercial/industrial, or vacant properties and village alleyways will be removed to the target excavation depth, as shown in the drawings (Appendix A). If the target excavation depth is the same as the maximum sample depth, X-ray fluorescence (XRF) screening will be performed at the base of the excavation. Pending the results of the XRF screening, additional excavation will be performed up to a maximum depth of 30 inches. If concentrations exceeding the cleanup levels remain at 30 inches of depth based on XRF screening, a demarcation fabric will be placed at the base of the excavation before backfilling and restoration.
- The excavated material will be transported to the FA and either placed directly in the constructed consolidation area, or in a staging pile at the FA for future placement within the consolidation area. The consolidation area will eventually be capped with a cover system consisting of a 24-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. If the excavated material is not placed within the FA consolidation area, the staging pile of excavated material will be vegetated for stabilization at the completion of the surrounding properties RA, or if work stops for an extended period of time (as determined by the owner's representative).

Residential cleanup levels for arsenic, cadmium, lead, and zinc were developed assuming unrestricted future use. Cleanup levels developed during the RI/FS (ENTACT 2008, ENTACT 2009a, ENTACT 2009b) were evaluated, and the lower of the calculated noncancer preliminary cleanup goal (PCG) and the calculated cancer PCG for each of the three target risk levels (10^{-4} , 10^{-5} , and 10^{-6}) was selected as summarized in the ROD (EPA 2012).

An exception was made for arsenic, where the noncancer PCG of 32 mg/kg was selected, which is based on a hazard index of 1. The selected PCG is lower than the cancer PCG based on the 10^{-4} target cancer risk level (35 mg/kg). The cancer PCGs based on 10^{-5} (3.5 mg/kg) and 10^{-6} (0.35 mg/kg) were lower than Illinois background (13 mg/kg), and EPA does not generally require cleanup below background levels. Table 1-1 shows the final cleanup levels for residential and nonresidential properties.

Table 1-1. Final Cleanup Levels*Old American Zinc Superfund Site Surrounding Properties*

| Contaminant of Concern | Residential (mg/kg) | Non-Residential (mg/kg) |
|-------------------------------|----------------------------|--------------------------------|
| Arsenic | 32 | 239 |
| Cadmium | 37 | 809 |
| Lead | 400 | 826 |
| Zinc | 6,400 | 306,600 |

1.4 Remedial Design Activities

RD activities to support implementation of the selected remedy have been outlined in EPA's Statement of Work dated February 17, 2017, attached to the Initial Work Assignment Form, dated February 17, 2017. The following activities were included in the surrounding properties' design:

- Project Management
- Community Involvement
- Field Investigation/Data Acquisition
- Sample Analysis
- Analytical Support and Data Validation
- Data Evaluation
- Prefinal/Final Design
- Technical and Post-RD Support

Project management, community involvement, and post-RD support are efforts that are required to manage the work and support EPA in related activities.

Properties and alleyways included in this design are based on results from 2002 and 2003 sampling performed by ENTACT (ENTACT 2003), predesign investigations completed by ARCADIS (ARCADIS 2016), and 2017 predesign sampling conducted by CH2M (CH2M 2018a). Based on the analytical results from these sampling efforts, over 100 properties and 15 alleyways require remediation. This design includes 67 properties and 9 alleyways that require remediation. The remaining properties are being addressed by the removal action, or will be included in an addendum.

Appendix A contains the design drawings, which are based on field measurements. Surveys were not performed. Drawings for properties sampled in 2017 that exceeded cleanup criteria were drafted from field measurements collected during property-sketching events. Properties that were sampled previously by ENTACT were measured and sketched during field reconnaissance if CH2M was granted access prior to or during the sketching event. For properties previously sampled by ENTACT where CH2M was not granted access, the design drawings were developed based on ENTACT's sampling sketches and publicly available aerial imagery. The property drawings include the following features: structures (such as a house, garage, or shed), property corners and boundaries, landscape features (trees and shrubs), driveways, sidewalks, patios/decks, gravel/concrete/asphalt surfaces, and streets.

Appendix B contains detailed design specifications. Appendix C contains the construction quality assurance plan (CQAP). Appendix D contains the engineer's estimate of construction cost for remediation. Appendix E includes agency consultation documentation, and Appendix F summarizes CH2M and ENTACT sampling data.

CH2M will prepare a design addendum for additional properties requiring remediation as identified through supplemental RD sampling. CH2M will also provide general technical support for the site during the RA/construction phase, as stated in the *Remedial Design Work Plan* (CH2M 2017).

Project Delivery Strategy

Section 2 presents the project delivery strategy for the remediation at the surrounding properties. The RA will consist of excavating soil from properties and Village alleyways where arsenic, cadmium, lead, and/or zinc concentration(s) exceed their respective cleanup levels. Each excavation will be backfilled to the original grade, and the area will be restored to as close to its original condition as practicable. The following subsections summarize primary components of the design and remediation.

2.1 Remedial Design

To streamline its development, preparation, and delivery, the RD will be accomplished in two phases: (1) preparation and submittal of the prefinal design and (2) preparation and submittal of the final design.

2.1.1 Prefinal Design

The primary objective of the prefinal design was to define, in detail, the technical parameters upon which the design is based. It also developed the conceptual strategies and ideas that compose the framework of the remediation project, to review the strategies and ideas with the stakeholders, and to finalize the strategies and ideas so that the final design could proceed with minimal changes (e.g., minimal cost and schedule impacts).

2.1.2 Final Design

Once the conceptual strategies, ideas, and supporting technical details were developed, reviewed, and finalized, the final design activities began. The conceptual strategies and ideas developed during the prefinal design were expanded into a set of final design documents consisting of the following:

- Final BODR
- Specifications
- Drawings
- Cost Estimate
- Constructability Review
- Revised Project Delivery Strategy
- Construction Quality Assurance Plan

Detailed design drawings (Appendix A) and specifications (Appendix B) have been prepared as part of the RD. As part of the RA activities, the RA contractor will be required to present a detailed work plan to the owner's representative describing how the work will be executed.

2.2 Remedial Action

Roles during the RA will be defined as follows:

- Owner: EPA, Region 5
- Engineer: CH2M
- Property Owner: Property owner of individual property within the surrounding properties area
- Tenant: Person(s) residing at the property, if different from Property Owner

- Owner's Representative: construction management firm, or United States Army Corps of Engineers (USACE), which EPA has contracted to complete the RA
- RA Contractor (contractor): Responsible for completing work described in the contract documents, and management of all subcontractors
- Subcontractor: A subcontractor retained by the contractor

The procurement strategy for implementing the RA includes planning, contractor prequalification, submittal of a Request for Proposals, evaluation of the proposals, submittal of the Request for Consent, contract award, and contract management.

Some of the design specifications for the project may be performance-based. This type of contract allows the contractor the flexibility to provide innovative and cost-effective solutions to the project. To provide prospective contractors with sufficient time to review the existing data and develop their proposals, the solicitation process will begin following approval of the final design document.

2.3 Procurement Activities

The design was prepared for separate contracts for select components of the RA. The components include, but are not limited to, the following: earthwork (including transportation, staging excavated soil at the FA, surveying, landscaping, watering of properties, and seeding and watering of the excavated soil staging pile at the FA) under a single contract, to be performed by the primary contractor (hereinafter referred to as contractor); and an analytical laboratory services contract. Although the contractor may choose to subcontract portions of the project, in this document "contractor" will refer to the primary RA contractor.

Procurement of contractors will be completed prior to commencing construction activities. Contractors for the RA activities are expected to be competitively procured, and procurement activities for the surrounding properties will be independent of any procurement activities for the FA.

Basis of Design

Section 3 presents the technical details and assumptions of the RD. Implementation of the RA will consist of several components, including general activities for the project, and property-specific activities. Although some of the components will occur concurrently, the general sequencing of the primary components is assumed to be as follows:

- Procurement
- Preconstruction activities
- Mobilization
- Site preparation
- Excavation of soil above applicable cleanup levels from surrounding properties
- Transportation of excavated soils to the FA and inspection and maintenance of the soil staging pile if material is not placed directly into the consolidation area
- Containing decontamination liquids and water that accumulates in unlined excavations for dust suppression at the FA in areas that have not been remediated
- Surveying (if owner's representative determines to be necessary)
- Backfill and compaction
- Site restoration and maintenance
- Demobilization
- Post-construction documentation

The bidders will propose the means and methods to complete work in compliance with project specifications. The solicitation documents will identify EPA as the owner of the project and CH2M as the engineer. The owner's representative (to be determined) will oversee the execution of the RA, which will be performed by the contractor (to be determined).

3.1 Design Criteria and Assumptions

In addition to the remedial action objectives described in Section 1.4, the following design criteria and assumptions were used to complete the RD. The assumptions are discussed in greater detail in the following sections.

- The owner's representative and contractor will set up field offices and staging areas at the FA.
 - A decontamination pad will be constructed by the FA RA contractor, for use by the surrounding properties RA contractor, as needed.
- One preconstruction meeting and one post-construction meeting will be held with Fairmont City to discuss the work to be performed at all alleyways. Since there is no landscaping, and restoration is consistent for all alleyways, a second preconstruction meeting is not included in the cost estimate.
- Property owners will be responsible for removing movable items, such as old cars, trampolines, and other large debris from the planned work areas, prior to mobilization to the respective residential, commercial/industrial, or vacant properties.
- General debris will be segregated and staged separately at the FA for offsite disposal.

- Yard waste from the RA will be chipped and staged in its own stockpile at the FA for composting or use at the FA.
- An XRF correlation study will be performed for site soils and XRF instrument to be used during the RA. EPA will select XRF screening criteria based on the results of the correlation study. It is assumed that samples will be collected from RA properties for XRF and laboratory analysis. A Quality Assurance Project Plan will be required for this work. Properties and yard areas to be sampled will be selected based on predesign investigation results to provide a sufficient number and distribution of analyte concentrations for the correlation study. The correlation study and preconstruction activities will be performed concurrently.
- Garden and landscaped areas will be screened with an XRF prior to excavation to prevent removal of plants and shrubs as much as possible. If the XRF screening results indicate that the garden and/or landscape areas exceed cleanup criteria, it will be excavated to the same depth as the yard area where it is located, pending XRF screening results.
- The excavation depths were determined based upon sampling results from the TCRA investigation, RI, and predesign sampling activities. Excavation will be performed to the maximum sample depth with one or more contaminant of concern (COC) exceedance(s) for each yard area.
- Excavation will occur to a maximum depth of 30 inches. The maximum design excavation depth is 24 inches. Yard areas that are designed to an excavation depth of 24 inches (or 18 inches for TCRA investigation properties) will be screened with an XRF at the bottom of the excavation. Pending the XRF screening results, additional excavation may be completed to a maximum depth of 30 inches. A final XRF screening will be performed at 30 inches to determine placement of demarcation fabric.
 - Excavation beneath immovable items (decks, sidewalks, small sheds, aboveground pools, and gravel, asphalt, or concrete driveways, etc.) will not be performed.
 - Gravel driveways that provide an effective barrier over soil and gravel easements will not be excavated. Gravel alleyways will be excavated as shown in the drawings. Asphalt alleyways will not be remediated.
- Trees less than 4 inches in diameter at breast height (4.5 feet above ground surface) will be removed and replaced, if necessary.
- Trees greater than 4 inches in diameter at breast height will not be removed. Manual excavation, or other method(s) approved by the owner's representative, will be performed underneath the drip zone of trees to remain, to a maximum of 8 feet from the tree trunk to minimize root damage. The average excavation depth underneath the drip zones was assumed to be 4 inches for cost-estimating purposes, but excavation will be performed to the full excavation depth (identified in the drawings), if possible.
- Water that accumulates in lined excavations (i.e., has not contacted contaminated soil) will be pumped onto the property owner's grass or through a geotextile material and discharged to the storm sewer system.
- Accumulated water in unlined excavations and decontamination liquids will be contained and stored at the FA for use for dust suppression at the FA in areas that have not yet been remediated.
- Excavated soil from the surrounding properties and alleyways will be transported to the FA for incorporation into a consolidation area during the FA RA. This design assumes that the FA RA and surrounding properties RA will be performed concurrently with a start date in spring 2019. In the event that the RAs are not performed concurrently, or if work stops for an extended period of time (as determined by the owner's representative), the soil staging pile will be seeded to provide stabilization and prevent transport of contaminated dust particles back into the surrounding area.

The cost estimate includes provisions for a single seeding of the soil staging pile. It is assumed that a satisfactory stand will be established after a 6-week maintenance period. The soil staging pile will be separate from the yard waste stockpile.

- During the RA, the contractor will be responsible for managing the soil staging pile at the FA to prevent transport of contaminated dust particles back into the surrounding area.
- Gravel alleyways will be restored by backfilling the excavated area(s) with general fill to a depth of 6 inches below ground surface (bgs), and then placing CA-6 material to final grade.
 - In alleyways where the excavation depth exceeds 18 inches, a 2 to 3-inch clean rock (estimated 6 inches lift thickness) will be placed in advance of the CA-6 material.
- Surrounding properties with grass, trees, shrubs, and perennial plants removed during excavation will be restored with similar quantity and species of those removed, and watered for a 6-week maintenance period. Trees that were removed for excavation will be replaced with 2-inch-caliper trees of the same species, if necessary. Annuals will not be replaced during site restoration activities.
 - Satisfactory stand is defined in the specifications. For cost-estimating purposes, it is assumed that satisfactory stand will be met at the end of the 6-week maintenance period. If deemed necessary by the owner's representative, an 8-week maintenance period may be performed at some properties. For this design, costs and schedule assume a 6-week maintenance period.
 - If, after the 6-week maintenance period, satisfactory stand has not been met and/or plants are in poor condition, they will be replaced and maintained by the contractor at no additional cost to the owner, engineer, or owner's representative.
 - An additional 6-week maintenance period will be performed only on seed and/or plants that were replaced.
 - After owner representative's acceptance at the end of the maintenance period(s), the property owner will be solely responsible for watering and maintenance.

3.2 Preconstruction Activities

Preconstruction work includes preparation of site plans and other submittals, identification of borrow sources for backfill that meet project specifications, and coordination with St. Clair County and affected utility companies. The work will be conducted prior to contractor mobilization. Appendix D presents the engineer's estimate of cost for this work.

3.2.1 Design Assumptions

3.2.1.1 Number of Properties Requiring Remediation

Sixty-seven properties and nine alleyways are included in this design and are targeted for remediation (Figure 3-1). Yard areas requiring remediation were determined using sampling results summarized in the TCRA investigation (ENTACT 2003), predesign investigation (ARCADIS 2016), and the predesign sampling results from CH2M's July and August 2017 sampling events, as summarized in the Data Evaluation Report (CH2M 2018a). Composite samples were collected for each yard area (one sample per yard area), in 6-inch intervals, up to a depth of either 18 or 24 inches, depending on the investigation. Yard areas exceeding cleanup levels for one or more COCs will be excavated entirely to the maximum exceedance depth. Additional properties and/or alleyways may be included as a design addendum or in future design document(s) if changes in property access or use occur. The number of yard areas requiring remediation at each property and alleyway varies. Yard areas for which arsenic, cadmium, lead, and zinc concentrations are below cleanup levels based on predesign sampling will not be remediated. Properties and yard areas to be remediated are provided in Table 3-1 and in the design

drawings provided in Appendix A. Additional properties identified for remediation will be included in an addendum to this report.

Property Access

The access agreements obtained for properties where predesign sampling was completed by CH2M will also provide access for RA (if owner provides consent). EPA mailed access agreements to the current property owners as part of CH2M's predesign sampling effort. Since property ownership and access status is dynamic, the owner's representative will obtain the most recent property access list from the EPA during the RA. The owner's representative is responsible for obtaining access agreements and/or confirming the status of existing access agreements during the RA.

3.2.1.2 Wetlands Delineation

The National Wetlands Inventory Mapper indicates that there is a freshwaters water wetland (PEM1C), mapped in the OAZ south section of the project adjacent to, or within a remediation area. A wetland delineation will be performed by the contractor prior to property excavation. Protocols and methods are provided in Section 4.1.2.2. and in the specifications.

3.2.1.3 Site-Specific Plans and Preconstruction Submittals

Pre-mobilization activities will include verification of compliance with the substantive requirements of applicable regulations. The contractor will also deliver applicable preconstruction submittals to the owner's representative and/or engineer for approval before mobilization, as outlined in the specifications (Appendix B). Preconstruction submittals include site-specific plans, as outlined below and in the specifications, and identification of source materials as required in the specifications and identified in the CQAP (Appendix C).

As part of the RA activities, the contractor will be required to submit the following site-specific plans for approval:

- Site-specific health and safety plan, which will outline procedures to be followed so that the work is completed safely with no adverse health effects to workers or the community.
- Project schedule.
- Work plan.
- Transportation and disposal plan, including onsite waste management, which will guide the transportation of soil and liquid wastes to the FA and onsite management of those wastes, offsite transportation and disposal of yard debris and haul routes.
- Contractor quality control plan, which will provide detailed guidance for implementation of quality processes and procedures during construction operations, and will include an air monitoring plan that describes air monitoring activities and compliance targets.
- Stormwater pollution prevention plan (SWPPP), which will describe the potential sources of stormwater pollution at the site, describe practices to reduce pollutants in stormwater discharges from the site, and identify procedures the contractor will implement to comply with the substantive requirements of Illinois General National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharge from Construction Site Activities (Illinois General NPDES permit ILR10; Illinois Environmental Protection Agency [IEPA] 2018).¹ Substantive requirements of Illinois General NPDES Permit will be adhered to, including inspections by a qualified person (that is, professional engineer,

¹ Since this RA is being performed under CERCLA, no soil erosion and sedimentation control permit is required to be issued. The contractor will prepare a SWPPP that will meet the soil erosion and sedimentation control permit requirements and discuss it with the appropriate staff at St. Clair County Soil and Water Conservation District, Madison County, Canteen Township, City of East St. Louis, Village of Fairmont City, and Village of Washington Park.

certified professional in erosion and sediment control, certified erosion sediment and stormwater inspector, or other knowledgeable person) who possess the skills to assess conditions at construction sites that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The qualifications of the qualified person will be in accordance with the requirements of Illinois General NPDES Permit and 40 *Code of Federal Regulations* (CFR) Parts 121 and 122.

- Recommendation for USACE Jurisdictional Determination of onsite wetlands regulated under the Clean Water Act (CWA) Section 404.

3.2.1.4 Staging Area, Borrow Source, and Disposal Source Identification

The contractor will identify potential borrow sources of general backfill, topsoil, select topsoil for garden areas, gravel, and rock in its proposal and confirm the intended facility(ies) within 5 days of Notice of Award. Prior to receiving the materials, the contractor will collect compliance samples of general backfill, topsoil, and select topsoil materials with the owner's representative. The owner's representative will submit the samples to the analytical and geotechnical laboratory contractors for testing to verify that the material meets specifications and are appropriate for use. Continued compliance samples will be collected and submitted for laboratory analysis at a frequency of 1 per 1,000 cubic yards throughout the RA to verify continue compliance of the material with project specifications. Gravel and rock will not be submitted for analytical or gradation analysis. The contractor will submit a materials sheet from the borrow source indicating that the material meets the specifications. No additional compliance submittals are required for gravel, unless the borrow source changes.

With EPA's approval, the staging area for field trailer(s), equipment, and borrow source material stockpiles will be an approximately 2.5-acre area located on the northeast portion of the FA, as shown in Drawing G-005 (Appendix A). The actual location of the staging area will be determined during the RA. The FA is secured with fencing, is in close proximity to the properties and alleyways requiring remediation, and has adequate area to stage excavated soil from the surrounding properties and alleyways, stockpile borrow materials, store equipment, house temporary field offices/trailers, and equipment decontamination facilities. Use of the staging area for stockpiling borrow materials provides the opportunity to use larger trucks to import borrow materials and for transportation and disposal, thereby reducing the overall transportation impacts. Silt fencing and appropriate erosion control measures will be placed around stockpiled materials and maintained by the contractor. An access area will be maintained to allow dump trucks and equipment to access the stockpiled materials within the area of silt fencing.

Depending on the sequencing of the FA RA and surrounding properties RA, excavated soils from the surrounding properties will be either staged near the existing slag stockpile area located in the northwest portion of the FA, or placed directly in the consolidation area. If the FA RA and surrounding properties RA are performed concurrently, the contractor will coordinate with the FA contractor before placing excavated material from the surrounding properties within the consolidation area. The consolidation area will consist of excavated soils from the surrounding properties and onsite residue material (building slabs and slag and smelter materials). The FA contractor will construct a perimeter berm around the consolidation area to provide containment and aid with the management of contact water and runoff generated during the filling of the cell. The FA contractor will place a 24-inch suitable soil cover over the filled consolidation area, followed by a 12-inch vegetative soil layer. Inspections and maintenance of the consolidation area will be performed by others. The consolidation area is currently designed to accommodate over 900,000 cubic yards of material. However, the final cell design may be adjusted to accommodate changes in consolidated material quantities. The consolidation area design, including sloping, compaction, stormwater management around the consolidation area, and restoration requirements, is outlined in the *Final Basis of Design Report, Old American Zinc Plant Superfund Site Facility Area Remedial Design* (CH2M 2018b).

For the purposes of this design, it is assumed that excavated material from the surrounding properties will be placed directly into the consolidation area (or stockpiled temporarily prior to placement into the consolidation area). However, in the event that the FA RA and surrounding properties RA are not performed concurrently, the excavated material will be staged at the FA, and moved to the consolidation area at a later date by the FA RA contractor. The excavated soil staging pile will be constructed and maintained as described in Section 3.6.

3.2.1.5 Coordination with St. Clair County, Madison County, Canteen Township, Village of Fairmont City, Village of Washington Park, and/or Nearby Cities

The surrounding properties are in St. Clair County, primarily in the Village of Fairmont City. Some of the surrounding properties are in the Village of Washington Park, and some in the City of East St. Louis. Properties included in future addendums may be within Madison County. Therefore, the owner's representative and the contractor will coordinate with St. Clair County, Madison County (as needed), Canteen Township, Village of Fairmont City, Village of Washington Park, and the City of East St. Louis, as appropriate. A coordination meeting before construction begins will include the following: a discussion of transportation routes; excavation near county-, township-, and village-owned utilities; live-loading plans; CERCLA-exempt permit substantive requirements; required licenses; allowable work hours; use of county, township, and/or village water; street closings; county, township, and/or village debris pickup; soil erosion control; tree removal; emergency response; and other special requirements and considerations.

3.3 Initial Mobilization

Initial mobilization includes that of the owner's representative, the contractor, and any subcontractors. Design assumptions are discussed in the following subsections, and costs are summarized in the cost estimate in Appendix D.

3.3.1 Design Assumptions

3.3.1.1 Owner's Representative and Contractor Mobilization

Initial mobilization will consist of the following, as needed:

- Documenting the condition of the haul route from the surrounding properties to the FA with pictures and videos.
- Constructing temporary facilities such as field office/trailers, material storage facilities, sanitary facilities, and temporary utilities. Utilities are not currently available at the FA. Construction of these facilities will be coordinated with the FA contractor and may be used by both contractors.
- Placing gravel at storage, laydown, and staging areas, as needed. The contractor will coordinate with the FA contractor prior to doing this work to ensure these features are not placed within the area the FA contractor will be working.
- Delivering equipment.
- Placing erosion and sediment control features for staging pile areas, consistent with the SWPPP.

Equipment to be used by the owner's representative, contractor, and subcontractors is expected to be transported by road. The contractor will provide and maintain required temporary facilities for the duration of the project, along with a field office/trailer.

Temporary utilities will be active for an estimated 34 weeks.

3.3.1.2 Site Security and Coordination

The FA, which is fenced, will be used as a staging area for the storage of equipment, stockpiling borrow material, stockpiling excavated source material, decontamination facilities (provided by FA contractor), and temporary field offices/trailers. Equipment and materials will be transported to the staging area at the FA each day so that security is not required at the surrounding properties. Excavated soil will also be transported to the soil staging pile or consolidation area each day. The contractor will be responsible for coordinating the staging area location for the surrounding property work with the contractor(s) performing work at the FA, as required. The contractor can elect to subcontract security to monitor site equipment and the staging area during nonworking hours. The contractor will maintain control over work areas during working hours at the site. The engineer, owner's representative, and EPA will not be held responsible for theft or damage to subcontractor equipment, materials, facilities, or field offices.

Since the FA is fenced, it is assumed that additional site security will not be performed. Therefore, there are no associated costs for this assumption.

3.4 Site Preparation

Site preparation activities specific to the surrounding properties RA include locating underground utilities, installing erosion and sediment control measures at stormwater inlets and other areas, documenting current conditions, and clearing and grubbing. Appendix D summarizes estimated costs associated with this work.

3.4.1 Design Assumptions

3.4.1.1 Excavation Limits

The excavation limits are shown in the property drawings (Appendix A), which were developed using field sketches and sampling information, aerial photography, and available parcel information. Surveys were not performed as part of the design activities. Property boundaries can be located using survey markers and property dimensions during the RA. The excavation limits include grassed areas, gardens, landscape beds, and other areas of exposed ground. Raised-bed gardens will be evaluated during the RA to determine if excavation is warranted based on bed construction and soil depth. Walkways made of pavers, bricks, or similar construction methods may be removed and reinstalled after the work is completed, but will be determined on a property-specific basis depending on the integrity, size, accessibility, level of effort, use, and other factors. Existing concrete sidewalks, gravel driveways, and gravel easements will not be removed unless in disrepair and the removal allows work to be performed more efficiently, on a case-by-case basis and as approved by EPA.

Data from the 2017 soil sampling event (CH2M 2018a), predesign investigation (ARCADIS 2016), and TCRA removal action report (ENTACT 2003) were screened against final cleanup levels to determine excavation extents. RI properties where CH2M was not granted access for field sketching are not included in this phase of the design. These properties will be designed using aerial imagery and included in an addendum.

3.4.1.2 Preconstruction Property Visits

The owner's representative and contractor will perform two preconstruction property visits with the property owner. The initial preconstruction meeting will document existing conditions of the property and determine the means and methods to implement the work. The second preconstruction meeting will document property owner approval of the work to be performed at the property.

Initial Preconstruction Meeting

Approximately 2 weeks prior to the start of work at a property, an initial preconstruction meeting will be held. The initial preconstruction meeting will consist of completing a Preconstruction Property Assessment Checklist with the property owner to document the existing conditions and capture digital photographs and/or video recording. A copy of the Preconstruction Property Assessment Checklist, along with a copy of the property-specific drawing, will be provided to each property owner before remediation begins. For vegetation clearing between April 1 and September 10, the Migratory Bird assessment will be performed and the Migratory Bird Field Assessment Checklist completed and submitted.

The owner's representative will prepare a site visit folder prior to meeting with the property owners to plan property-specific RAs. The folder will contain a base drawing of the property (Appendix A) and a signed site access agreement.

During the initial preconstruction meeting, garden and landscaped areas will be screened with an XRF to identify if garden and landscaped areas will be removed during excavation. The XRF screening criteria will be determined by an XRF correlation study, performed by the EPA. If the XRF screening results indicate that the garden and/or landscape area(s) exceed cleanup criteria, it will be excavated to the same depth as the yard area where it is located.

The owner's representative and contractor will meet with the property owner for each property. During the meeting, the property drawing will be updated to develop a property-specific plan for RA at each specific property. A tree and plant inventory will be prepared by a qualified representative, identifying the existing vegetation that is designated for removal and replacement or that will be kept. If perennials are not in bloom at the time of the initial property visit, an independent visit may be conducted to complete the plant inventory. The property owner would not be required to attend any independent visits.

Additionally, documentation of any measures necessary to comply with location-specific Applicable or Relevant and Appropriate Requirement (ARARs) such as the National Historic Preservation Act, the Endangered Species Act, the Migratory Bird Treaty Act, Executive Order 11990 Wetlands, and the Clean Water Act Section 404 will also occur during this meeting. The planned excavation areas may change during the course of the RA to address property owner concerns or special requests, or previously unknown conditions, such as utility locations. If significant changes to the property-specific design are discussed during the meeting, such as owner requests, the proposed changes will be documented and submitted to EPA for approval.

Photographs and/or video will be taken to document the preconstruction condition of each of the properties and adjacent areas designated for RA. During the initial property visit, the owner's representative will also discuss with the property owner (and tenant, if applicable) the risks that are present during construction activities and the need to stay away from the construction areas.

Second Preconstruction Meeting

A second property preconstruction meeting will be held approximately 1 week prior to the start of work. Information gathered during the initial preconstruction meeting (and/or subsequent independent property visits as necessary) will be compiled into a preconstruction package with copies of notes, updated property drawings (hand markups or PDF-edited drawings; new drawings will not be generated), plant inventory, and a CD/DVD of photographs and/or video documenting the preconstruction conditions.

After the second preconstruction meeting, the property owner, owner's representative, contractor, and any subcontractors present at the meeting will all sign an agreement describing the work to be performed at the property.

3.4.1.3 Utility Locate

It is the responsibility of the contractor to locate all utilities within and near the excavation areas prior to starting work at the property. The one-call utility-location system (JULIE) will be contacted before work begins at each property. The utility companies contacted through JULIE do not mark non-utility-owned or privately installed lines (such as water and sewer) from the street to the house, or electric and telephone lines from the house to a garage or shed. Therefore, a third-party utility-locating service may be used to identify private utilities within and near the excavation areas, if deemed necessary by the owner's representative. During the initial preconstruction property visit, the property owner (and tenant, if applicable) will be interviewed to determine if there are any undocumented or private utilities, such as irrigation systems, on the property. The location of property-owner-identified utilities may be confirmed using a third-party utility-locating service and other physical means at the property. The actual location will be recorded on the property drawing for permanent documentation. Alternative utility routing may be necessary and may consist of temporary disconnection of low overhead lines or shielding of electric lines.

3.4.1.4 Survey No. 1—Preconstruction Survey

Up to three surveys may be performed at each property:

- Preconstruction survey to document existing surface elevation.
- Post-excavation survey to document excavation depths.
- Post-backfilling survey to document the restored elevations.

Surveys will be performed if determined necessary by the owner's representative. The surveying method will be determined by the owner's representative.

3.4.1.5 Property Protection

Before any soil excavation can begin, two points of continuous access for property owners and tenants will be established and maintained when possible, with one point of continuous access at all times. If it is necessary to restrict access for extended periods, the work will be done at a time when the property owner and tenant will not be present at the property. Property owner and tenant access to the property will not be restricted between the hours of 6:00 p.m. and 7:00 a.m.

Appropriate signage and protective measures will be placed where required for pedestrian traffic on sidewalks or vehicular traffic on streets in accordance with the transportation and disposal plan developed by the contractor. Temporary construction (orange safety) fences will be maintained around active excavation areas to demarcate zones that should not be entered by members of the public.

3.4.1.6 Clearing, Grubbing, and Tree, Shrub, and Fence Removal

Clearing and grubbing will be performed, where necessary, at properties where excavation activities will occur. Vegetation will be removed flush with ground surface. Existing stumps will not be removed or ground up as part of the clearing and grubbing activities. During excavation activities, soil will be removed around the root mass as much as possible if the maximum excavation depth cannot be reached.

During the RA, trees will be evaluated on a case-by-case basis. It is assumed that trees less than 4 inches in diameter at breast height will be removed, if necessary. Trees larger than 4 inches in diameter will remain in-place unless otherwise directed by the owner or owner's representative due to safety concerns, access issues, property owner requests, or other property-specific factor. Trees for removal may be modified during preconstruction activities; however, trees and shrubs will not be removed between April 1 and September 10 to the extent practicable. Trees and shrubs that are removed within this timeframe will follow the protocols described in Section 4.1.2 and the specifications, which includes conducting a Migratory Bird inspection and completing the Migratory Bird Checklist 24 hours prior to vegetation clearing.

Aboveground plant materials removed as part of clearing activities will be stockpiled at the FA. If mature tree removal is required, the contractor may elect to take tree trunks containing no visible soil to a local mill for lumber. Disposal of belowground root mass associated with tree, shrub, and vegetation will be managed as contaminated material in accordance with the contractor's transportation and disposal plan, and will be transported to the FA, where it will be ground up and stockpiled with the plant materials at the FA for use at the FA, or to compost. The chipped waste can only be used on the FA.

It is expected that the property owner will remove personal items from the work areas prior to the start of work. Debris located within the excavation areas will be removed with approval from the property owner. Examples of debris may consist of yard waste, wood, concrete pieces, or other materials. Personal items that are not removed by the property owner will be inventoried and temporarily stored at another location within the property or in a secure place at the staging area. Items removed from the property (either for storage or disposal) will be identified in an inventory list included in the property owner preconstruction package.

The contractor will determine access to soil excavation areas. The access point may be narrow at some locations because of existing site features (such as fences or debris). The contractor may remove and temporarily store sections of fence, if necessary, to allow for access. The removed fencing sections will be stored at the property outside of the excavation limits or at the staging area. Based on observations at the residential, commercial/industrial, or vacant properties that need remediation, fence section removal and storage will likely be needed for access to the areas requiring remediation. The contractor will coordinate with the property owners to identify and document the items that need to be relocated. Documentation will be provided on the preconstruction checklist.

Of the 67 properties included in this design, the average area requiring clearing and grubbing is estimated to be 4,660 square feet per property. It is assumed that clearing and grubbing will not be necessary for the alleyways.

3.4.1.7 Erosion and Sediment Control

Erosion and sediment control measures will be implemented in the staging area, at properties, and right-of-way areas as necessary during active construction activities and prior to vegetative stabilization. Erosion control measures at the staging area and excavated soil staging pile (if excavated soils are not placed directly into the consolidation area) will be as specified in a SWPPP, will be consistent with IEPA General NPDES Permit No. ILR10, and may include silt fencing, inlet protection, and appropriate best management practices (BMPs) at the construction site entrance and exit. BMPs will include the following: administrative controls (for example, planning- and scheduling-related BMPs); signage; good housekeeping practices; and stormwater, erosion, and sediment controls. Substantive requirements of Illinois General NPDES Permit for Stormwater Discharges from Construction Site Activities ILR-10 (IEPA 2018) will be adhered to, including inspection of erosion control measures. If excavated soils are not placed directly into the consolidation area, they will be stockpiled at the FA and managed by the contractor to prevent offsite transport of dust. Erosion and sediment control measures will be installed and maintained by the contractor around the excavated soil staging pile from the surrounding properties for the duration of construction activities, and until a satisfactory stand of grass is established or straw matting is placed on the staging pile at the FA (if required).

Erosion and sediment control measures at properties or right-of-way areas may consist of inlet protection, silt fencing, erosion control blanket, and BMPs. Appropriate erosion and sediment control measures will be installed prior to any ground disturbance at a property and will be maintained during the earthwork activities at the property. The use of silt fence at properties is not the preferred erosion control measure due to maintenance requirements, but will be used if necessary. The silt fence will be removed after backfilling and placement of erosion control matting (if needed). Erosion and sediment

control measures that require removal, such as inlet protection, will be removed after completion of the maintenance period and final street cleaning.

The contractor is responsible for inspection of temporary soil erosion and sedimentation control measures during construction, and for as long as necessary based on the SWPPP. Damaged or insufficient erosion and sedimentation control measures will be promptly replaced or repaired. Erosion and sediment control measures at the FA will be removed after all onsite work has been completed and heavy equipment has been moved offsite.

3.5 Excavation, Transportation, and Disposal

The descriptions of excavation, transportation, and disposal work and design assumptions are provided in the following subsections. Appendix D includes the estimated costs associated with this work.

3.5.1 Description of Work

Excavation, transportation, and offsite disposal activities will be performed. Completion of excavation activities will require soil excavation by both mechanical and manual methods.

3.5.2 Design Assumptions

3.5.2.1 Excavation Approach

A yard area is designated for remediation if one or more of the sample intervals exceeded the cleanup levels for one or more COCs. For estimation of quantities, the excavation in each yard area was determined by the maximum sample depth with an exceedance of cleanup levels.

Yard areas requiring remediation were determined using sampling results summarized in the TCRA investigation (ENTACT 2003), predesign remedial investigation (ARCADIS 2016), and the predesign sampling results from CH2M's July and August 2017 sampling events, as summarized in the Data Evaluation Report (CH2M 2018a). During the TCRA sampling events, properties were sampled to a maximum depth of 18 inches bgs. During the RI and predesign sampling events, properties were sampled to a maximum depth of 24 inches bgs. Based on the analytical results from the TCRA investigation, RI and predesign sampling activities, over 100 properties and 15 alleyways exceeded the cleanup levels for at least one COC. Properties and alleyways with lead concentrations greater than 1,200 mg/kg (and some additional properties with lead concentrations near 1,200 mg/kg) were prioritized for removal action and are not included in this design. Soil sampling activities are ongoing, and additional properties and alleyways may be added to this design as an addendum. Appendix F summarizes data used to determine excavation limits for properties and alleyways included in this design.

The maximum design excavation depth is based on the maximum sample depth (i.e., 18 inches for properties sampled during the TCRA investigation and 24 inches for properties sampled during the RI and predesign sampling events). Yard areas that are designed to an excavation depth that is the maximum sample depth will be screened with an XRF at the bottom of the excavation. Pending the XRF screening results, additional excavation may be completed to a maximum depth of 30 inches. A final XRF screening will be performed at 30 inches. If the results of the XRF screening indicate that impacted soil remains at 30 inches bgs, demarcation fabric will be placed at the base of the excavation over the entire yard area to indicate the potential for exceedance(s) at depths below the excavation depth. Table 3-1 summarizes which properties require XRF screening at the bottom of the excavation. The owner's representative will track the final excavation depth and demarcation fabric placement for each property.

The XRF screening levels and sampling approach will be established through a correlation study, as determined by EPA. XRF screening will also be performed in landscaped areas to avoid removal of plants and shrubs, where possible.

3.5.2.2 Excavation of Soil

Mechanical excavation will primarily be used. However, within 8 feet of a tree trunk (or within the drip line of a tree if the drip line radius is less than 8 feet), excavation will be performed using manual excavation or by an alternate method approved by the owner's representative, to minimize tree-root damage, unless shown otherwise in the property drawings. Manual excavation (or other approved method(s)) will be performed to expose and avoid damaging woody roots 1 inch in diameter or greater. Manual excavation (or other approved method[s]) will follow the roots 1 inch in diameter or greater to the horizontal extent of the excavation (or the tree drip line) to expose the roots. At a distance greater than 8 feet from the trunk, mechanical excavation may be conducted using a mini-excavator (or equal) and spotter to remove soils between exposed roots. If roots are damaged, corrective pruning will be conducted to create a clean cut and promote quick wound closure and regeneration. Although excavation within the drip line of a tree may be limited to protect tree roots, excavation will proceed to the target depth, if possible.

Manual excavation, or other method(s) approved by the owner's representative, will also be done around buried utilities within or near excavation areas. Currently, according to the Underground Utility Facilities Damage Prevention Act Illinois Compiled Statutes (ILCS) 220 50/ (220 ILCS 50/4) and the JULIE Excavator Handbook, hand digging is required where utilities are going to be exposed or are likely to be exposed. "Soft excavation techniques," including hand digging, within a "caution zone" will be required within 18 inches of either side of the approximate location marks. Hand excavation will also be performed in areas with limited access or existing site features that impede mechanical excavation, or where heavy equipment may damage structures.

If equipment will travel between the excavation and the truck, 0.75-inch plywood, or approved equivalent, will be placed on the ground surface where equipment will travel. The plywood will be secured to the ground to distribute the weight of the equipment, thus protecting shallow tree roots and minimizing ruts in areas outside the excavation extents. Polyethylene sheeting (a minimum of 6-mil thick, or approved equivalent) will be placed on the ground between the excavation area (or plywood sheeting, if used) and trucks to prevent spillage or tracking of contaminated soil. The sheeting will extend a minimum of 2 feet under the truck. Any spillage that may occur onto the plywood or sheeting will be cleaned up and placed into the truck.

There will be an offset around existing structures where no excavation will be performed to provide protection for the structures. Soil excavation will be performed to within 1 foot of permanent structures at a 1-to-1 slope to minimize damage. If the permanent structure is a mobile home, soil excavation will be performed to within 3 feet of the support point loads at a 1-to-1 slope to minimize damage. A 1-to-1 slope is not required where no permanent structure is present, such as at property lines and yard area divides. Soil excavation will be performed to a maximum of 6 inches from permanent surfaces (for example, sidewalks), depending on the condition of the surface. If the permanent surface is in good condition, no offset for soil excavation is required. Where gardens are adjacent to a permanent structure, except for mobile home support point loads, manual excavation will be performed up to within 6 inches of the surface of the structure to minimize remaining impacted soil in areas of high contaminated soil exposure potential. Manual excavation of the top 2.5 to 3 inches of grasses or groundcover in the offset areas will be completed to remove contaminated surface soils and provide a uniform appearance after restoration.

Vertical excavation limits will be performed to at least the excavation depth identified in the drawings or by XRF screening, and up to 0.1 foot deeper (i.e., within 0.00 foot and plus 0.10 foot). Horizontal excavation limits will be performed to the excavation limits identified in the drawings, and up to 0.20 foot outside the excavation limits (i.e., 0.00 foot to plus 0.20 foot). Excavated soil will be loaded into trucks or into containers that will be loaded onto trucks for transport to the FA. Temporary

stockpiles of excavated soil prior to loading will not be allowed to remain overnight at properties or within alleyways.

If areas of suspected contaminated fill are visually observed during excavation, additional excavation may be performed in these areas at the direction of the owner or owner's representative. Suspected contaminated fill may consist of ash, slag, sinter, clinkers, and stained, discolored soil, etc.

Traffic control will be used as needed during earthwork activities and will comply with the requirements of Illinois Department of Transportation (IDOT), St. Clair County, Madison County, Canteen Township, Fairmont City, the Village of Washington Park, and the City of St. Louis, as applicable. A visual barrier, such as high-visibility construction fencing, will be placed around each excavation area to prevent accidental entry into the work area. Signage will also be posted at the properties during earthwork activities with contact information for the contractor in case of questions or concerns.

The average soil excavation volume per property is estimated to be 141 cubic yards, based on 67 properties requiring remediation. The average soil excavation volume per alleyway is estimated to be 134 cubic yards, based on 9 alleyways requiring remediation. Table 3-1 summarizes the volume of soil requiring excavation and soil excavation limits per property or alleyway.

3.5.2.3 Accumulated Water

Excavations may be lined at the conclusion of each workday when rainfall is anticipated to prevent precipitation from contacting potentially contaminated soils inside excavations. If standing water is present in an unlined excavation, or penetrates beneath the liner, the standing water will be allowed to infiltrate before backfilling activities begin, or the water will be contained in 55-gallon IDOT-approved drums, portable tank(s), or approved equivalent, for subsequent transport to the FA. The water may be used for dust suppression activities in impacted areas of the FA that have not been remediated.

If precipitation collects on top of the temporary liner and does not contact soils, the water may be pumped onto the property owner's grass or pumped through a geotextile material before being discharged to the storm sewer system with approval from the local municipality (Metro East Sanitary District).

A decontamination pad will be constructed by the FA RA contractor, for use by the surrounding properties RA contractor, as needed. Aqueous waste generated at the FA from equipment decontamination will also be contained and used for dust suppression activities at the FA in impacted areas that have not been remediated.

3.5.2.4 Air Monitoring

Real-time air monitoring for particulate matter will be conducted continuously at each property and at the FA near the borrow material staging pile and excavated material staging pile while earthwork is being performed or when the staging pile is being constructed. Data will be recorded to a data logger once per minute and checked by personnel once per 30 minutes, in accordance with the CQAP and air monitoring plan (Appendix C). The air monitoring equipment will be placed at locations to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone. Dust monitors will be placed upwind and downwind of earthwork activities at a property to determine the impact of the construction activities on air quality.

Dust-monitoring data will be evaluated against the EPA National Ambient Air Quality Standards for PM₁₀ of 1.5 milligrams per cubic meter (mg/m³). The standards are based on a 24-hour average, but active construction activities will only be performed for approximately 10 to 11 hours per day, so no dust generation is assumed during the non-working hours. During work hours, an alarm will be set at 0.75 mg/m³ to observe activities and determine the cause for elevated particulate concentrations and to evaluate potential mitigation measures to maintain the 24-hour average concentration below the criteria.

A health and safety dust-monitoring action limit of 0.5 mg/m³ was determined based on the maximum COC concentrations detected in samples during the RI and predesign sampling. Exceedances of the dust-monitoring criteria require dust-abatement measures, typically application of water, or stop work and further evaluation.

Personal air sampling pumps will be used in conjunction with dust-monitoring equipment and will have samples collected for laboratory analysis to determine potential exposure to arsenic, cadmium, lead, and zinc. These samples will be representative of the worst-case exposure that may occur to any potential receptors outside of the excavation area, such as residents or pedestrians, from a given excavation. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, and (4) level of work activity anticipated. Air monitoring is discussed in further detail in the air monitoring plan, which is an attachment to the CQAP (Appendix C).

3.5.2.5 Waste Characterization of Soil

The selected remedy in the ROD provides for soils from residential, commercial/industrial, or vacant properties or village alleyways (surrounding properties) with COCs above human health cleanup levels to be consolidated on-FA. The soils are being consolidated in accordance with the EPA AOC policy (1996) and as discussed in the preamble to the National Contingency Plan (55 *Federal Register* 8758-8760, March 8, 1990). Therefore, no further evaluation of such soils is necessary.

However, in the event that waste characterization sampling is requested by EPA during the RA, soils will be sampled from the five yard areas with the highest COC concentrations (one yard area for each COC, plus an additional yard area for lead) and analyzed for Toxicity Characteristic Leaching Procedure and Synthetic Precipitation Leaching Procedure.

3.5.2.6 Transportation of Excavated Soil

The excavated soil will either be live-loaded directly into trucks, or will be placed into containers that will be loaded onto trucks for transport to the FA. Before a truck leaves an excavation area, the containers and truck exterior will undergo dry decontamination measures so that the containers and trucks will be free of loose soil. Trucks with loose soil will be tarped or otherwise covered before transport. For purposes of cost estimating, it is assumed that the excavated soils will be loaded at the property into 5-ton dump trucks, or comparable, and transported from the properties to the FA for staging. Documentation of load trips to the FA from each property will be completed, and will document the number of trips from each property to the FA, the time, and approximate load of each trip. Transport of excavated soil will be conducted in accordance with DOT regulations. Wet decontamination will be performed on all trucks that hauled contaminated soils, prior to final demobilization.

The cost of transportation will be paid based on the volume of in-place soil excavated and measured using preconstruction and postconstruction surveys (if performed), or an alternative method approved by the owner's representative. For the properties included in this design, the average volume of soil that will be transported to the FA is about 141 cubic yards per property based on 67 properties and 134 cubic yards per alleyway based on 9 alleyways. Actual volumes will be determined during the RA.

Dust abatement will be performed during loadout and transportation operations as necessary to prevent emission of visible fugitive dust beyond the property boundaries. Activities may include a work stoppage until dust-abatement measures are implemented. Cleaning of the roads and application of water are anticipated abatement measures. Given the site setting, transport is anticipated to be limited primarily to paved roads to transport contaminated soils to the FA and return to the properties being remediated. Unpaved alleyways are present within the surrounding properties area, and transport on these will be minimized to the extent practicable. Street cleaning of paved roads is assumed to use equipment that will capture debris after sweeping, using either mechanical methods with water for dust suppression or

vacuum to minimize fugitive dust emissions. To minimize spillage of excavated soil onto the roads, plastic sheeting or tarps will be placed under trucks during loading activities, and trucks will undergo dry decontamination measures.

3.6 Excavated Soil Staging Pile at the FA

Current RA plans assume that excavated soils will be placed directly in the consolidation area at the FA. Soil placement and compaction requirements for the consolidation area are detailed in the *Final Basis of Design Report, Old American Zinc Plant Superfund Site Facility Area Remedial Design* (CH2M 2018b).

However, if excavated soils cannot be placed directly into the consolidation area, they will be managed in a staging pile. The soil staging pile will be constructed and maintained as detailed in the specifications. If all the excavated soil from the surrounding properties is stockpiled, the approximate footprint of the soil staging pile, with sloping, will be approximately 2.5 acres. The soil staging pile will not be placed over existing monitoring wells located on the FA or in a location that would require double-handling of the material for the FA RA.

Excavated soil will be placed in the soil staging pile in controlled lifts and compacted to remove clods and significant voids. The soil should be compacted by running a bulldozer (or approved equivalent) over the placed soil a minimum of five passes to reduce the potential for erosion issues. If there is a stoppage in work for an extended period of time (to be defined by the owner's representative during the RA), the soil staging pile will be covered with 4 inches of topsoil, seeded, and watered to provide stabilization of the soil staging pile. The watering frequency will be based on site and weather conditions to establish and maintain a satisfactory stand of grass on the staging pile, as outlined in the specifications (Appendix B). If the excavated soil staging pile is not seeded for vegetation by October 15, it will be seeded with a seed mixture for disturbed sites and steep slopes and covered with straw matting to minimize erosion. The staging pile will be inspected and maintained by EPA until placed in the consolidation area. The cost estimate includes costs for a single stabilization of the soil staging pile for planning purposes.

3.7 Post-excavation Survey

If directed by the owner's representative, a post-excavation survey will be conducted at each property once excavation of soil to the design extent, or as determined by XRF screening, is completed to confirm the final depth and aerial extent is within tolerance. The contractor's surveyor will use the same grid (x and y coordinates) and datum as the preconstruction survey to the extent practicable to document post-excavation elevations. Appendix D presents the estimated costs for this work.

3.8 Filling and Compaction

Filling and compaction activities will be conducted after excavation verification of design and/or XRF screening extent is performed. Activities include placement and compaction of general backfill, followed by placement of topsoil, gravel, or other material described as follows:

- **Lawn Areas**—General backfill will meet the requirements outlined in the specifications. General fill will be placed in 6-inch loose lifts, with compaction between 80 percent and 90 percent of standard Proctor maximum density (ASTM International D698). In situ density testing will be performed using a nuclear-density gauge or approved equivalent to demonstrate proper compaction. General backfill will be placed from the base of the excavation to within approximately 6 inches of surrounding undisturbed grade. The remaining thickness required to match preconstruction grade will be lightly compacted topsoil to minimize settlement while still allowing infiltration of water and penetration of roots.

- **Alleyways**—General backfill will meet the requirements outlined in the specifications. General backfill will be placed in 3-inch loose lifts to a depth of 6 inches bgs. Then, CA-6 material will be placed to final grade. In alleyways where the excavation depth exceeds 18 inches, a 2- to 3-inch clean rock (approximately 6-inch lift), such as IDOT CA-1 material, will be placed before placing the CA-6 material. Material will be prepared and compacted to the satisfaction of the owner's representative.
- **Gardens and Landscaped Areas**—In garden areas, general backfill will be placed to within approximately 18 inches of surrounding undisturbed grade. General backfill will meet the requirements outlined in the specifications, and will be placed in 6-inch loose lifts, with compaction between 80 and 90 percent of standard Proctor maximum density (ASTM International D698). In situ density testing will be performed using a nuclear-density gauge or approved equivalent to demonstrate proper compaction. Lightly tamped select topsoil will be placed in the garden and landscaped areas from 18 inches below grade (or the maximum excavation depth if less than 18 inches) to the original grade.

Backfill quantity assumptions for the properties and alleyways included in this design are as follows:

- General backfill, including both properties and alleyways, is assumed to be 5,760 cubic yards. The volume of general backfill was calculated as equaling the total volume of excavated soil, including assumptions for over-excavation, minus the volume of topsoil, select topsoil, and gravel (see the following bullets).
 - A total over-excavation volume of 1,480 cubic yards is included in this assumption. This assumption is based on COC concentrations at the maximum sample depth for those properties requiring XRF screening at the base of the excavation.
 - Up to 64,560 square feet of demarcation fabric may be placed during the RA if required in all yard areas designed to maximum sample depth. For cost-estimating purposes, it is assumed that 17,100 square feet of demarcation fabric will be placed during the RA. This quantity is based on COC concentrations in the maximum sample depth and assumed to decrease in concentration with depth.
- Total topsoil (properties only) is assumed to be 5,580 cubic yards. The volume of topsoil was calculated by the total property area requiring remediation (approximately 312,250 square feet; alleyways were excluded since they will be restored with gravel) multiplied by a depth of 6 inches minus the total 1:1 sloping along property excavation perimeters. The volume of select topsoil or gravel in the top 6 inches for restoration (see the following bullets) was removed to determine the topsoil quantity.
- Total CA-6 gravel, including both properties and alleyways, is assumed to be 742 cubic yards (1,340 tons). The total quantity was calculated by taking the total area of gravel backfill (approximately 40,090 square feet) and multiplying by a depth of 6 inches. A 1.8 factor was used to convert from cubic yards to tons.
 - Total CA-1 aggregate is assumed to be 108 cubic yards (194 tons). The total quantity was calculated by multiplying the total area of gravel backfill (approximately 5,810 square feet) by a depth of 6 inches. A 1.8 factor was used to convert cubic yards to tons.
- A total select topsoil quantity is assumed to be 43 cubic yards, which will be placed at up to 7 properties, pending XRF screening results. The volume of select topsoil was calculated by taking the area of the gardens (total of roughly 1,160 square feet) and multiplying by a depth of 12 inches.

Suppliers of general backfill, topsoil, and select topsoil will be identified as part of the preconstruction activities. The contractor will collect samples at the source and submit them to the owner's representative to send to the laboratory for chemical analyses and physical characteristics, including

standard Proctor and particle-size distribution analysis, as outlined in the specifications. Topsoil will also be analyzed for fertility and salinity. Amendments may be added to topsoil and/or select topsoil if necessary to support establishment of seed and specifications. Borrow sources will be required to meet the requirements outlined in the specifications (Specification Sections 32 23 23 Fill and Backfill and 32 91 13 Topsoil Preparation) to be approved for use. If separate borrow sources are identified for topsoil and select topsoil, each source will be sampled for approval, and continued compliance sampling will be performed in accordance with the frequencies specified in the following paragraphs.

Compliance samples for each borrow source will be collected as outlined in the specifications to verify continued compliance with project specifications. The owner's representative will collect compliance samples with contractor assistance. Additionally, a sample will be retained by the owner's representative for visual comparison during construction activities to confirm consistency in the materials. If inconsistencies in the materials are observed, additional samples may be collected to determine continued compliance or nonconformance with project requirements.

Wet decontamination will be performed on the decontamination pad at the staging area prior to use of equipment for backfill activities unless dedicated separate excavation and backfill equipment are used. Decontamination water will be managed as described in Section 3.5.2.3.

Appendix D presents the engineer's estimated costs associated with this work.

3.9 Post-backfilling Survey

If determined necessary by the owner's representative, a post-backfilling survey will be conducted to confirm that the topsoil placement grade has been met where applicable and on a property-specific basis, that no low areas exist to allow precipitation to pond. The same grid as the preconstruction and post-excavation surveys will be used to document post-construction elevations. Appendix D summarizes estimated costs for surveying.

3.10 Restoration

Restoration work includes contingencies for utility repair and final street cleaning. Sidewalk and asphalt repair, if necessary, will be performed after seeding or placement of gravel in backfilled areas.

Appendix D summarizes estimated costs associated with this work.

3.10.1 Contingencies

Sprinkler systems, electrical, piping, and plumbing located within or near the limits of excavation will be inspected and tested, as appropriate, to determine whether damage occurred during the remediation. Repairs will be made by appropriately qualified and licensed subcontractors as applicable.

In the event that a section of fencing is removed for access and is unable to be reinstalled due to the condition of the fence, a new section of fencing will be purchased and installed. The fencing will match the type and finish of the remainder of the fence. It is assumed that fencing sections requiring replacement will be an 8-foot length. Fence sections that are removed from properties and are not usable (estimated to be 2 8-foot panels at 15 percent of the properties) will be replaced with new fence sections. Wherever possible, the original fencing will be replaced instead of installing new sections.

Repairs will be performed according to manufacturer's instructions and applicable building codes. Unforeseen conditions encountered during excavation will be addressed on a site-specific basis.

3.10.2 Street Cleaning

Street cleaning will be performed daily from the time earthwork is initiated until topsoil placement at properties or gravel placement in alleyways is complete. Final street cleaning will be conducted prior to

the removal of the erosion and sediment control measures, such as inlet protection (if applicable). Street cleaning is assumed to use equipment that will capture debris after sweeping, using either mechanical methods with water for dust suppression, or vacuum, to minimize fugitive dust emissions. Debris from street cleaning will be managed with excavated soil for transportation and placement in the consolidation area or soil staging pile.

3.10.3 Facility Area Staging Area

Areas of the FA disturbed during the RA activities in the surrounding properties will be restored to preconstruction conditions to the extent practical. Disturbed areas in the FA will be seeded or covered with approximately 3 inches of gravel, as necessary, to maintain the integrity of the staging area. Completion of this work will be coordinated with the FA contractor.

3.10.4 Concrete and Asphalt Repair

Damage to concrete sidewalks and asphalt areas, including streets, resulting from the RA activities will be repaired. Repairs will be performed according to applicable code enforcements. The design includes a contingency that up to 150 cubic yards of damaged concrete sidewalk will be repaired. It is assumed that asphalt will be repaired using IDOT Standard Specifications for Class A-3 surface.

3.11 Landscaping and Maintenance

Landscaping and maintenance includes replacement of trees, shrubs, and perennials removed as a part of the excavation, seeding over the backfilled excavation areas, and watering. Annual plants will not be replaced. Appendix D summarizes estimated costs associated with this work.

3.11.1 Tree, Shrub, and Perennial Replacement

Trees, shrubs, and perennials will be replaced per property as follows:

- Any removed trees will be replaced during landscaping activities, if necessary. Tree species that are at risk due to current or anticipated diseases or infestations in the foreseeable future (such as Emerald Ash tree borer) will not be replaced with the same species. It is estimated that three trees will be removed and replaced during the RA. Trees that were removed for excavation will be replaced with 2-inch-caliper trees of the same species, if necessary. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories.
- Shrubs will be replaced with those of similar species and quantity as were removed, which is estimated for costing purposes at 82 shrubs. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories, and by the XRF screening results in the landscaped areas. The replacement shrubs will be nursery grade and not mature size, regardless of the size of the removed shrubs.
- Perennial plants will be replaced with the similar quantity and species removed. For cost-estimating purposes, it is assumed that 100 perennials will be replaced, based on observations during the field sketching events. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories, and by the XRF screening results in the landscaped areas.
- Because annuals achieve their growth cycle in 1 year, they will not be replaced during site restoration activities.
- Mature trees that die during the RA because of the construction activities will be replaced with a 2-inch-caliper tree of the same species as practicable.

Plants will be placed within 24 hours prior to seeding to maintain a 6-week maintenance period for the property. Plants will be watered for 6 weeks after placement, and up to 8 weeks, if deemed necessary by the owner's representative. Plants that are showing signs of inundation or drought, such as brown or wilted leaves, at the end of the maintenance period will be replaced and maintained by the contractor. An additional 6-week maintenance period will be performed on plants that were replaced. After owner representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance.

3.11.2 Seed, Mulch, and Decorative Stone

Seed will be placed to restore the excavation area to preconstruction extents. The average area requiring seeding per property is estimated at 4,660 square feet.

Mulch, 3 inches thick, will be placed over select topsoil in areas where gardens were present prior to the RA and used for plantings as required in specifications (estimated 11 cubic yards, total).

Areas with existing decorative stone (not gravel) will be replaced with 3 inches of comparable material. It is estimated that a total of 10 cubic yards of rock mulch will need to be replaced during the RA.

The seed will be watered for 6 weeks after placement and up to 8 weeks if determined necessary by the owner's representative. For cost-estimating purposes, it is assumed that up to 10 watering events may be required per property, assuming a 6-week maintenance period. Actual watering frequency will depend on temperatures, precipitation, shade conditions, and other factors affecting soil moisture. Seed that is showing signs of inundation or drought at the end of the maintenance period will be replaced and maintained by the contractor, followed by an additional 6-week maintenance period for the seed that was replaced. After owner representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance.

3.11.3 Erosion and Sediment Control

Erosion and sediment control measures will be in accordance with the SWPPP. Erosion and sediment controls that may be used and require removal, such as inlet protection, will be removed after seeding and final street cleaning. Inspections will be performed during excavation and restoration for as long as necessary based on the SWPPP and compliance with Illinois General NPDES Permit for Stormwater Discharges from Construction Site Activities ILR10 (IEPA 2018). Damaged or insufficient erosion and sediment control measures will be promptly replaced or modified to be rendered effective.

3.12 Post-construction Property Review

Property-specific reviews will be performed after each property is restored to document the restoration and the condition of the surrounding area. Photographs and/or video of the restored work areas will be obtained to document the post-construction condition. A letter will be prepared for the property owner documenting the completion of the RA at the property. The current property owner will be asked to sign off that their property has been restored to the condition agreed to during the preconstruction meetings or to identify any outstanding issues (punch list items) to be addressed. If no punch list items are identified, EPA and an owner's representative will meet with the Property Owner to perform a final inspection.

Punch list items will be corrected within 7 workdays of receipt of the punch list. After the completion of the punch list items, EPA and an owner's representative will meet with the Property Owner to perform a final inspection.

Appendix D presents the engineer's estimated costs associated with this work.

3.13 Warranty Period

The landscape subcontractor will warranty trees, shrubs, and perennials through the end of the maintenance period, and replace defective trees, shrubs, and perennials, if necessary, as identified within the warranty period. Watering after tree, shrub, or perennial warranty replacement will be provided by the contractor. After owner representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance. For cost-estimating purposes, it is assumed that the warranty will be 12 percent of the total landscaping costs.

3.14 Demobilization

Demobilization will include removal of the temporary facilities such as field trailer, utilities, material storage facilities, equipment decontamination facilities, and erosion and sediment control features. Until site restoration and demobilization are completed, the owner's representative will perform construction oversight and will verify that erosion and sediment control features comply with the SWPPP.

Appendix D presents the estimated demobilization cost.

3.15 Post-construction Documentation

The owner's representative will prepare an RA completion report, including an ambient air monitoring report. The RA completion report will document the work completed by the owner's representative and its contractors using a report format used for other similar residential Superfund sites and in accordance with *Close Out Procedures for National Priorities List Sites, OSWER Directive 9320.2-22* (EPA 2011).

Table 3-1. Excavation Depths and Volume of Excavated Material
Old American Zinc Superfund Site Surrounding Properties

| Property Address | Parcel ID(s) | Section A (FY1/Q1/NE) | Section B/Back (BY1/Q2/NW) | Section C (FY2/Q3/SE) | Section D (BY2/Q4/SW) | Section E/ Front | Middle | Side | Design Volume of Excavated Material (cubic yards) | XRF Bottom of Excavation |
|---------------------------------------|---|--------------------------|-------------------------------|--------------------------|--------------------------|---------------------|--------|------|--|--------------------------------|
| █ N 31ST ST | 02-08.0-203-019, 02-08.0-203-020, 02-08.0-203-030 | | | 6 | 6 | | | | 67 | |
| █ N 31ST ST | 02-08.0-204-075 | | | | | | | 18 | 55 | |
| █ N 32ND ST | 02-08.0-204-069,02-08.0-204-070,02-08.0-204-071, 02-08.0-204-068 | | | | 12 | | | | 131 | |
| █ N 32ND ST | 02-08.0-204-057,02-08.0-204-058, 02-08.0-204-059 | 6 | 6 | | | | | | 41 | |
| █ N 32ND ST | 02-08.0-205-072 | | 6 | | | 18 | | 18 | 110 | |
| █ & █ N 36TH ST | 02-08.0-206-071, 02-08.0-206-070,02-08.0-206-068, 02-08.0-206-069 | | 6 | | | | | | 56 | |
| █ N 36TH ST | 02-08.0-206-083 | | 6 | | | | | | 75 | |
| █ N 36TH ST | 02-08.0-207-043 | | 18 | | | | | | 59 | BY |
| █ N 37TH ST | 02-04.0-301-005 | | 24 | | | | | | 104 | Back |
| █ N 37TH ST | 02-04.0-301-017 | | 18 | | | | | | 32 | |
| █ N 39TH ST | 02-04.0-302-042 | | 12 | | | | | | 101 | |
| █ N 40TH ST | 02-04.0-303-054 | | | | 6 | | | | 25 | |
| █ N 41ST ST | 02-09.0-106-091 | | 18 | | 12 | | | | 181 | |
| █ N 41ST ST | 02-04.0-305-074 | | 18 | | | | | | 73 | BY |
| N 42ND ST | 02-09.0-106-056 | | 6 | | | | | | 28 | |
| █ N 42ND ST | 02-04.0-312-016 | | 12 | | | | | | 58 | |
| N 42ND ST | 02-04.0-305-040 | | 12 | | | | | | 51 | |
| N 43RD ST | 02-04.0-313-029 | | 12 | | | | | | 229 | |
| █ N 43RD ST - PARCEL ID -013 | 02-04.0-313-013 | | 6 | | | | | | 58 | |
| █ 8 N 43RD ST - PARCEL ID -014 & -015 | 02-04.0-313-014, 02-04.0-313-015 | | 6 | | | | | | 29 | |
| N 44TH ST | 02-04.0-307-056 | | 12 | | | | | | 166 | |
| N 44TH ST | 02-09.0-108-069 | 18 | 6 | | | | | | 1528 | FY1 |
| █ N 44TH ST | 02-09.0-108-046,02-09.0-108-047 | | | | 18 | | | | 81 | |
| █ N 44TH ST | 02-04.0-313-065, 02-04.0-313-066 | | 6 | | | | | | 152 | |
| █ N 44TH ST | 02-04.0-314-086 | 6 | | | | | | | 55 | |
| █ N 44TH ST | 02-04.0-308-039, 02-04.0-308-040 | 6 | 6 | | | | | | 67 | |
| █ N 44TH ST | 02-04.0-307-045, 02-04.0-307-046 | 18 | 12 | | | | | | 232 | FY |
| █ N 44TH ST | 02-04.0-308-045 | | 12 | | | | | | 105 | |
| N 45TH ST | 02-04.0-314-066, 02-04.0-314-067 | | 18 | | | | | | 115 | BY |
| █ N 45TH ST | 02-09.0-109-045 | 6 | 6 | | | | | | 107 | |
| █ N 45TH ST | 02-09.0-110-012 | 6 | | | 12 | | | | 371 | |
| █ N 45TH ST | 02-09.0-110-011 | 12 | 6 | 6 | 6 | | | | 435 | |
| █ N 45TH ST | 02-04.0-314-064, 02-04.0-314-065 | | 18 | | | | | | 132 | BY |
| █ N 45TH ST | 02-04.0-314-034, 02-04.0-314-035, 02-04.0-314-036, 02-04.0-314-037, 02-04.0-314-038 | | | 12 | | | | | 141 | |
| █ N 45TH ST | 02-04.0-308-074, 02-04.0-308-075, 02-04.0-308-076, 02-04.0-308-077, 02-04.0-308-078, 02-04.0-308-079, 02-04.0-308-080, 02-04.0-308-081, 02-04.0-308-082 | 18 | 6 | | | | | | 229 | FY |
| █ N 45TH ST | 02-04.0-308-069, 02-04.0-308-089 | | 6 | | | | | | 41 | |

Table 3-1. Excavation Depths and Volume of Excavated Material
Old American Zinc Superfund Site Surrounding Properties

| Property Address | Parcel ID(s) | Section A (FY1/Q1/NE) | Section B/Back (BY1/Q2/NW) | Section C (FY2/Q3/SE) | Section D (BY2/Q4/SW) | Section E/ Front | Middle | Side | Design Volume of Excavated Material (cubic yards) | XRF Bottom of Excavation |
|----------------------------|--|--------------------------|-------------------------------|--------------------------|--------------------------|---------------------|--------|------|--|---------------------------------------|
| █ N 45TH ST | 02-04.0-308-064, 02-04.0-308-066 | 18 | | | | | | | 78 | |
| █ N 52ND ST & N 52ND ST | 2352 N 52ND: 02-09.0-206-001, 02-09.0-206-002, 02- 09.0-206-003, 02-09.0-206-004, 02-09.0-206-005; N 52ND: 02-09.0-206-006, 02-09.0-206-007, 02-09.0- 206-008 | | 6 | | | | | | 95 | |
| █ N 52ND ST | 02-09.0-205-029, 02-09.0-205-030, 02-09.0-205-031 | | 6 | | | | | | 46 | |
| █ & █ N 58TH ST | 02-10.0-107-021, 02-10.0-107-049, 02-10.0-107-017,02- 10.0-107-018,02-10.0-107-019,02-10.0-107-020 | | | 12 | | | | | 181 | |
| █ 3 N 58TH ST | 02-10.0-106-037,02-10.0-106-038 | | | | | 6 | | | 37 | |
| █ N 59TH ST | 02-10.0-108-051 | 6 | | | | | | | 75 | |
| █ N 62ND ST | 02-03.0-104-024 | 12 | | | | | | | 187 | |
| █ N 62ND ST | 02-03.0-201-006 | | 12 | | | | | | 28 | |
| Alley 01 | NA | | | 12 | | | | | 71 | |
| Alley 10 | NA | 18 | 18 | | | | | | 263 | |
| Alley 15 | NA | 6 | | | | | | | 44 | |
| Alley 16 | NA | 12 | | | | | | | 66 | |
| Alley 03 | NA | 18 | 12 | | | | | | 213 | |
| Alley 06 | NA | 24 | | | | | | | 63 | Section A |
| Alley 07 | NA | | 12 | | | | | | 95 | |
| Alley 08 | NA | | | 6 | 6 | | | | 96 | |
| COLLINSVILLE RD | 02-04.0-203-007,02-04.0-203-008 | | 12 | | | 12 | | | 182 | |
| █ COLLINSVILLE RD | 02-04.0-303-061, 02-04.0-303-062 | 6 | 6 | | | | | | 223 | |
| █ COLLINSVILLE RD | 02-04.0-305-006, 02-04.0-305-007, 02-04.0-305-008 | 6 | 12 | | | | | | 141 | |
| █ COLLINSVILLE RD | 02-04.0-401-001, 02-04.0-401-002, 02-04.0-401-003, 02-04.0-401-004, 02-04.0-401-005 | 12 | 12 | 12 | 18 | | | | 623 | BY2 |
| █ COOKSON RD | 02-05.0-401-002 | | 12 | | | | | | 83 | |
| █ COOKSON RD | 02-09.0-102-096 | 18 | | | | | | | 28 | FY |
| █ COOKSON RD | 02-09.0-106-078 | | | 6 | | | | | 25 | |
| █ COOKSON RD | 02-04.0-312-074 | | 12 | | | | | | 65 | |
| █ COOKSON RD | 02-04.0-314-072 | | 6 | | | | | | 40 | |
| KINGSHIGHWAY | 02-03.0-308-011 | 6 | | | | | | | 107 | |
| █ KINGSHIGHWAY | 02-03.0-304-010, 02-03.0-304-011 | | 6 | | | | | | 47 | |
| MAPLE AVE | 02-09.0-103-022 | 18 | 12 | | | | | | 71 | FY |
| 3210 MAPLE AVE | 02-08.0-205-037,02-08.0-205-038 | 24 | 24 | 24 | 18 | | | | 505 | Section A, Section B, Section C |
| █ MAPLE AVE | 02-08.0-202-074 | | | | | 18 | | 18 | 126 | |
| █ MAPLE AVE | 02-08.0-202-048, 02-08.0-202-047 | 18 | 18 | 18 | | | | | 168 | |
| █ MAPLE AVE | 02-08.0-202-071 | | | | 24 | | | | 118 | Section D |
| █ MAPLE AVE | 02-08.0-207-005 | 24 | | 12 | 18 | | | | 217 | Section A |
| █ MAPLE AVE | 02-08.0-202-072 | 24 | | | 18 | | | | 128 | Section A |

Table 3-1. Excavation Depths and Volume of Excavated Material
Old American Zinc Superfund Site Surrounding Properties

| Property Address | Parcel ID(s) | Section A (FY1/Q1/NE) | Section B/Back (BY1/Q2/NW) | Section C (FY2/Q3/SE) | Section D (BY2/Q4/SW) | Section E/ Front | Middle | Side | Design Volume of Excavated Material (cubic yards) | XRF Bottom of Excavation |
|------------------|---|--------------------------|-------------------------------|--------------------------|--------------------------|---------------------|--------|------|--|--------------------------------|
| MAPLE AVE | 02-09.0-102-054 | | | 24 | | | | | 131 | Section C |
| THOMAS AVE | 02-03.0-307-005,02-03.0-307-006,02-03.0-307-007,02-03.0-307-008 | | | | 6 | | | | 48 | |
| THOMAS AVE | 02-03.0-307-011 | | | | | 12 | | | 40 | |
| THOMAS AV | 02-03.0-304-012 | | 6 | | | | | | 20 | |
| THOMAS AVE | 02-03.0-305-059 | | | | 6 | | | | 58 | |
| Alley AT1-S | NA | | | 24 | | | | | 297 | Section C |

Compliance with Applicable or Relevant and Appropriate Requirements

This project is being performed in accordance with the CERCLA ROD for OAZ (EPA 2012). Under CERCLA, a requirement under environmental laws may be either applicable or relevant and appropriate to a removal action, but not both. *Applicable requirements* are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, RA, location, or other circumstances found at a CERCLA site. *Relevant and appropriate requirements* are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, RA, location, or other circumstances at a CERCLA site, address problems or situations sufficiently, similar to those encountered at the CERCLA site and are well-suited to the particular site.

Under CERCLA 121(e), onsite RAs (that is, activities at the surrounding properties) do not need to comply with the administrative requirements of ARARs (environmental laws and regulations, such as permitting). Substantive requirements however must be met. Only state standards that are more stringent than federal requirements may be applicable or relevant and appropriate.

The statutes and regulations listed in Table 4-1 contain requirements deemed to be ARARs for the surrounding properties RA, and describe how the design will comply with those requirements. Table 4-1 is organized by two types of ARARs: action-specific and location-specific. Chemical-specific ARARs were described in the FS and the ROD, and were used to develop the remedial action objectives described in Section 1.3. Therefore, they are not described in this BODR. Of the ARARs described in the ROD, only those determined to relate to the selected remedy for the surrounding properties RA are included in Table 4-1.

4.1 Minimizing Public and Environmental Impacts

Environmental and public health and welfare impacts will be minimized through the following methods:

- Site access control
- Protection of Natural and Cultural Resources
- Development of and adherence to SWPPP
- Transportation of excavated and backfill materials
- Placement of excavated soil within the consolidation area at the FA

4.1.1 Site Access Control

Access control to the site during construction is necessary to prevent exposure of non-RA personnel to contaminated soil and open excavations. Access will be controlled by installing fencing around work areas. Typical working hours for construction activities will be 7:00 a.m. to 6:00 p.m., Monday through Friday. Related activities may be performed at the FA outside of these hours.

Two points of continuous access for residents and property owners will be established and maintained when possible, with one point of continuous access at all times. If it is necessary to restrict access for periods of time, it will be necessary to coordinate the work to be done at a time when the property

owner and resident will not be present at the property. Access to the property will not be restricted between the hours of 6:00 p.m. and 7:00 a.m.

4.1.2 Natural Resources

4.1.2.1 Protected Species

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation system, there is a potential for protected species to be present at the site. The site is also within the Mississippi flyway for migratory birds. To minimize impacts to these species and to comply with conservation as outlined in the specifications, trees and shrubs will not be removed between April 1 and September 10 to the extent practicable. If tree removal must occur during this timeframe, inspections for active migratory birds will be performed, and measures will be taken to minimize impacts. An effects analysis consultation request was submitted to USFWS and USFWS provided their concurrence (Appendix E). The project is not expected to have a significant adverse effect on any protected species.

4.1.2.2 Wetlands

The National Wetlands Inventory Mapper indicates that there is a freshwaters water wetland (PEM1C) mapped in the OAZ south section of the project adjacent to, or within, a remediation area. The project specifications require that a wetland delineation be performed to confirm the presence and extent of wetlands prior to ground disturbance. Small pocket wetlands may be identified within the project area, including emergent freshwater wetlands to the south of the OAZ and in the northern end of the FA.

The delineation will follow the protocols and methods in the *USACE Wetlands Delineation Manual*, Wetlands Research Program Technical Report Y-87-1 (1987), the *USACE Jurisdictional Determination Form Instructional Guidebook* (May 30, 2007) (JD Guidebook), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (2010), including any USACE St. Louis District requirement. Location of wetlands, waters, and other regulated areas are to be recorded using a GPS unit with sub-meter accuracy. Data and representative photographs of each environmental resource will be recorded. Data collected will be used to prepare a recommendation for a USACE Jurisdictional Determination of whether the wetlands are regulated under the CWA Section 404. If regulated wetlands will be disturbed as part of the project, the work will comply with the substantive requirements of Nationwide Permit No. 38 Cleanup of Hazardous and Toxic Waste.

4.1.3 Cultural Resources

Portions of several remediation properties have been previously surveyed for archaeological resources. None of these properties contain archaeological resources. However, properties north and east of the facility are located within the boundaries for Cahokia Mounds, a National Register of Historic Places- and UNESCO World Heritage-listed site. Due to the probability of additional archaeological resources within the Surrounding Area, an Unanticipated Discovery Plan and Archaeological Monitoring Plan for Cultural Resources (UDP) was developed to establish methodology for monitoring protocols and addressing previously unidentified archaeological deposits during excavation. The Illinois State Historic Preservation Agency has reviewed the UDP and provided comments, which are incorporated in the UDP. Appendix E contains a UDP, a cultural resources literature review, including documentation from the Illinois Department of Natural Resources Historic Preservation Division's website (2017), National Register of Historic Places, and the UNESCO World Heritage database.

4.1.4 Stormwater Management

Contractors will be required to implement procedures during construction activities to prevent or reduce pollutants in stormwater discharges, consistent with NPDES Permit No. ILR10. As a matter of coordination, St. Clair County requirements will also be considered. Stormwater pollution prevention

features and erosion control features will be described in the SWPPP designed to reduce stormwater pollution potential at the site. The following erosion and sediment control measures will be identified in the plan:

- Silt fence
- Inlet protection
- Temporary covering of stockpile piles and staging pile
- Appropriate BMPs at construction site entrance and exit and the excavation areas
- Inspections and maintenance procedures

Spill and release accident scenarios could occur and involve rinsates from decontamination activities or contaminated soil. Also, the potential exists for spills of vehicle fuel and hydraulic oils. The SWPPP will address the following activities:

- Preplanning for spill control
- Spill and fire control materials and equipment
- Spill control measures
- Drum, container, and tank handling and moving procedures

The plans will also provide instructions to respond to and mitigate releases on the project site.

4.1.5 Transportation and Disposal

The contractor will develop a transportation and disposal plan, which will describe transporting of excavated soil to the consolidation area or soil staging pile at the FA, transporting contaminated debris to the FA for stockpiling/use at the FA, transporting and using aqueous waste at the FA, and importing materials from approved borrow sources. The transport vehicles will be tarped or otherwise covered to enclose all loads of contaminated and non-contaminated material during all phases of transportation, including transportation from the residences to the staging area, from the residences to the disposal facility (if applicable), from the staging area to the residences, and from the staging area to disposal facilities (if applicable). The transportation and disposal plan will address the following:

- Identification of all waste streams
- Decontamination procedures
- Waste characterization and profiling
- Waste and container management, storage, labeling, and marking
- Waste transportation practices, including but not limited to compliance with DOT regulations
- Manifests/haul tickets and other shipping documentation, if required
- Waste disposal, if required
- Spill response and reporting
- Dust abatement
- Traffic control, including any necessary road closure permits or protective measures
- Records and reporting

Table 4-1. Applicable or Relevant and Appropriate Location-Specific and Action-Specific Requirements for the Selected Remedy*Old American Zinc Superfund Site Surrounding Properties*

| Requirement | Requirement Synopsis | Status |
|--|--|--|
| Location-specific ARARs | | |
| Endangered Species Act of 1973 (16 United States Code §1531) | Conserve and protect endangered and threatened species and their habitat. | Potential for protected species to be present onsite. USFWS is being consulted regarding the project approach. To mitigate for potential impacts to Indiana bat, a timing restriction for tree-clearing activities from May 1 to July 31 will be implemented to the extent practicable. |
| Migratory Bird Treaty Act of 1972 (16 United States Code 703-712) | Establishes federal responsibility for the protection of the international migratory bird resources. Taking, killing, or possessing migratory birds without authorization is unlawful. | Applicable. Illinois is located within the Mississippi flyway. The design includes procedures to minimize disturbance and avoid destroying active nests. To mitigate for potential impacts to migratory birds, tree and shrub clearing will occur outside the typical breeding bird season of April 1 to September 10 to the extent practicable. |
| National Historic Preservation Act 16 United States Code Section 470 | The Act requires historically significant properties be protected. | Several surrounding properties are within the National Register of Historic Places Boundary for the Cahokia Mounds site. The State Historic Preservation Office will continue to be consulted related to the effects of the undertaking on listed or eligible properties. |
| Executive Order on Protection of Wetlands E.O. No. 11990 40 CFR 6.302(a) and Appendix A | Requires federal agencies to avoid, to the maximum extent practicable, the adverse effects associated with the destruction or loss of wetlands. | To Be Considered. USFWS National Wetlands Inventory identified mapped wetlands at several areas within the site. Before work commences, a wetland delineation across the entire site will be conducted and a USACE Jurisdictional Determination of whether the wetlands are regulated under the CWA Section 404 will be prepared. The specifications require that work in regulated wetlands comply with substantive requirements of the Nationwide Permit #38 Cleanup of Hazardous and Toxic Waste. |
| Section 404 of the Clean Water Act 40 CFR Part 230 33 CFR Part 330 | Regulates discharge of dredged or fill material into waters of the United States, which include regulated wetlands. The proposed discharge must avoid, to the fullest extent practicable, adverse effects, especially on aquatic ecosystems. | USFWS National Wetlands Inventory identified mapped wetlands at several areas within the site. Before work commences, a wetland delineation across the entire site will be conducted, and a USACE Jurisdictional Determination of whether the wetlands are regulated under the CWA Section 404 will be prepared. The specifications require that work in regulated wetlands comply with substantive requirements of the Nationwide Permit #38 Cleanup of Hazardous and Toxic Waste. |

Table 4-1. Applicable or Relevant and Appropriate Location-Specific and Action-Specific Requirements for the Selected Remedy*Old American Zinc Superfund Site Surrounding Properties*

| Requirement | Requirement Synopsis | Status |
|--|--|---|
| Action-specific ARARs | | |
| State Certifications and NPDES (40 CFR Part 122.26(a)(14)(x)) | Requires the development and implementation of a water pollution prevention plan or a stormwater best management plan. Also outlines monitoring and inspection requirements for a variety of activities. IEPA implements the NPDES program and the associated stormwater management requirements. | Applicable. The substantive requirements of the Illinois NPDES General permit for Stormwater Discharge from Construction Site Activities ILR10 and the stormwater pollution prevention plan will be followed where remedial construction activities involving land disturbance of more than 1 acre. |
| Fugitive Particulate Matter (Illinois Administrative Code Title 35, Part 212, Subpart K) | Establishes requirements for dust control in Sections 212.301, 212.315, and 212.316. | Applicable. The RA may generate fugitive dust; the design addresses methods to minimize and control dust to meet the regulatory standard. |
| Illinois Clean Fill Regulations (Illinois Administrative Code Title 35, Part 1100) | State regulations governing clean fill operations. | Applicable if imported soil fill is component of remedy to fill excavated areas. |
| Illinois Special Waste Regulations (Illinois Administrative Code Title 35, Part 808) | Generators are required to classify the waste, manifest the waste, use permitted transporters, and dispose of the waste at a permitted facility. | Applicable. Liquids generated by the remedial action would be considered pollution control waste. |
| Illinois Uniform Environmental Covenants Act (765 Illinois Compiled Statutes 122) | The purpose of an environmental covenant is to ensure that land use restrictions and engineering controls designed to control the potential environmental risk of residual contamination will be recorded in the land records and enforced over time, perpetually if necessary, while allowing that real estate to be conveyed from one person to another subject to those controls. | Applicable. The design addresses securing an environmental covenant at locations where cleanup does not achieve unrestricted use standards, to ensure that land use restrictions and engineering controls are recorded in the land records and enforced over time. |
| Noise (Illinois Administrative Code Title 35, Subtitle H Part 900.102-106) | Regulations contain specific requirements that pertain to nuisance noise levels, sound emission standards, and limitations. | Applicable. The design will specify the noise levels set forth in the regulations that will not be exceeded during the RA. |
| Guidance for NPDES Construction Site Stormwater Discharges in the State of Illinois | Guidance related to implementation of the Federal Clean Water Act General Construction Permit program in Illinois. | To Be Considered guidance for controlling stormwater discharges associated with construction will be considered in developing the SWPPP. |

Construction Schedule

The RA construction is assumed to occur in 2019 over a period of approximately 34 weeks. Figure 5-1 shows the construction schedule, which was built around a mobilization date in early March 2019. The actual RA start date is to be determined.

Engineer's Estimate of Construction Cost

The engineer's estimate of construction cost for the RA, as described in this report, is estimated at \$4,054,900 (Class 2 with an accuracy of plus 20 percent to minus 15 percent) based on the results of the RI and predesign sampling, and the assumptions presented in this RD. Appendix D contains the cost estimate. The cost estimates have been prepared for guidance in project evaluation and implementation from the information available at the time that the cost estimate was prepared. The final costs of the project will depend on actual labor and material costs, competitive market conditions, actual site conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the cost estimates presented in the final design. Because of these factors, project feasibility and funding needs must be carefully reviewed before specific financial decisions are made or project budgets are established to help ensure project evaluation and adequate funding.

Drawings

Appendix A contains drawings of each individual property. Table 7-1 lists the drawings.

Table 7-1. List of Drawings

Old American Zinc Superfund Site Surrounding Properties

























| Drawing Number | Drawing Name |
|----------------|---|
| G-001 | Title, Location Maps, and Index to Figures |
| G-002 | Properties and Alleyways to be Remediated |
| G-003 | Properties and Alleyways to be Remediated |
| G-004 | Legend |
| G-005 | Proposed Stockpile and Staging Areas |
| C-001 |  North 31st Street |
| C-002 |  North 31st Street |
| C-003 |  North 32nd Street |
| C-004 |  North 32nd Street |
| C-005 |  North 32nd Street |
| C-006 |  North 36th Street |
| C-007 |  and 2507 North 36th Street |
| C-008 |  North 36th Street |
| C-009 |  North 37th Street |
| C-010 |  North 37th Street |
| C-011 |  North 39th Street |
| C-012 |  North 40th Street |
| C-013 |  North 41st Street |
| C-014 |  North 41st Street |
| C-015 |  North 42nd Street (02-09.0-106-056) |
| C-016 |  North 42nd Street |
| C-017 |  North 42nd Street |
| C-018 |  North 43rd Street (02-04.0-313-029) |
| C-019 |  North 43rd Street (02-04.0-313-013) |
| C-020 |  North 43rd Street (02-04.0-313-014 AND 02-04.0-313-015) |
| C-021 |  North 44th Street (02-04.0-307-056) |
| C-022 |  North 44th Street (02-09.0-108-069) |
| C-023 |  North 44th Street |
| C-024 |  North 44th Street |

Table 7-1. List of Drawings*Old American Zinc Superfund Site Surrounding Properties*

| Drawing Number | Drawing Name |
|----------------|---|
| C-025 | North 44th Street |
| C-026 | North 44th Street |
| C-027 | North 44th Street |
| C-028 | North 44th Street |
| C-029 | North 45th Street (02-04.0-314-066 AND 02-04.0-314-067) |
| C-030 | North 45th Street |
| C-031 | North 45th Street |
| C-032 | North 45th Street |
| C-033 | North 45th Street |
| C-034 | North 45th Street |
| C-035 | North 45th Street |
| C-036 | North 45th Street |
| C-037 | North 45th Street and North 45th Street (02-04.0-308-064) |
| C-038 | North 52nd Street and North 52nd Street |
| C-039 | North 52nd Street and North 52nd Street (02-09.0-205-031) |
| C-040 | North 58th Street and 2306 North 58th Street |
| C-041 | North 58th Street |
| C-042 | North 59th Street |
| C-043 | North 62nd Street |
| C-044 | North 62nd Street |
| C-045 | Collinsville Road (02-04.0-203-007 and 02-04.0-203-008) |
| C-046 | ollinsville Road |
| C-047 | ollinsville Road |
| C-048 | ollinsville Road |
| C-049 | ookson Road |
| C-050 | ookson Road |
| C-051 | ookson Road |
| C-052 | ookson Road |
| C-053 | ookson Road |
| C-054 | Kingshighway (02-03.0-308-011) |
| C-055 | Kingshighway and Kingshighway (02-03.0-304-010) |
| C-056 | Maple Avenue (02-09.0-103-022) |
| C-057 | Maple Avenue |

Table 7-1. List of Drawings*Old American Zinc Superfund Site Surrounding Properties*

| Drawing Number | Drawing Name |
|-----------------------|--|
| C-058 | Maple Avenue |
| C-059 | Maple Avenue |
| C-060 | Maple Avenue |
| C-061 | Maple Avenue |
| C-062 | Maple Avenue |
| C-063 | Maple Avenue |
| C-064 | Thomas Avenue |
| C-065 | Thomas Avenue |
| C-066 | Thomas Avenue (02-03.0-307-005, 02-03.0-307-006, 02-03.0-307-007, and 02-03.0-307-008) |
| C-067 | Thomas Avenue (02-03.0-307-011) |
| C-068 | Alley 01 |
| C-069 | Alley 03 |
| C-070 | Alley 06 |
| C-071 | Alley 07 |
| C-072 | Alley 08 |
| C-073 | Alley 10 |
| C-074 | Alley 15 |
| C-075 | Alley 16 |
| C-076 | Alley AT1-S |

Specifications

Appendix B contains the following specifications:

| DIVISION 1—GENERAL REQUIREMENTS | |
|--|---|
| 01 11 00 | Summary of Work |
| 01 29 00 | Payment Procedures |
| 01 31 13 | Project Coordination |
| 01 31 19 | Project Meetings |
| 01 32 00 | Construction Progress Documentation |
| 01 33 00 | Submittal Procedures |
| 01 45 16.13 | Contractor Quality Control |
| 01 50 00 | Temporary Facilities and Controls |
| 01 77 00 | Closeout Procedures |
| DIVISION 2 – EXISTING CONDITIONS | |
| 02 24 00 | Delineation of Wetlands and Other Waters of the United States |
| DIVISION 31—EARTHWORK | |
| 31 10 00.00 | Site Preparation |
| 31 23 16 | Excavation |
| 31 23 23 | Fill and Backfill |
| DIVISION 32—EXTERIOR IMPROVEMENTS | |
| 32 91 13 | Topsoil Preparation |
| 32 92 00 | Turf and Grasses |
| 32 91 26 | Site Restoration |
| 32 93 00 | Plants |

Constructability Review

Staff from CH2M's affiliate, CH2M HILL Constructors, Inc., reviewed the BODR and specifications with an emphasis on constructability. In addition, this BODR and specifications were reviewed by the project review team, and comments were incorporated, as appropriate.

References

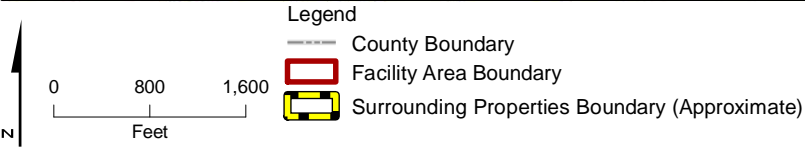
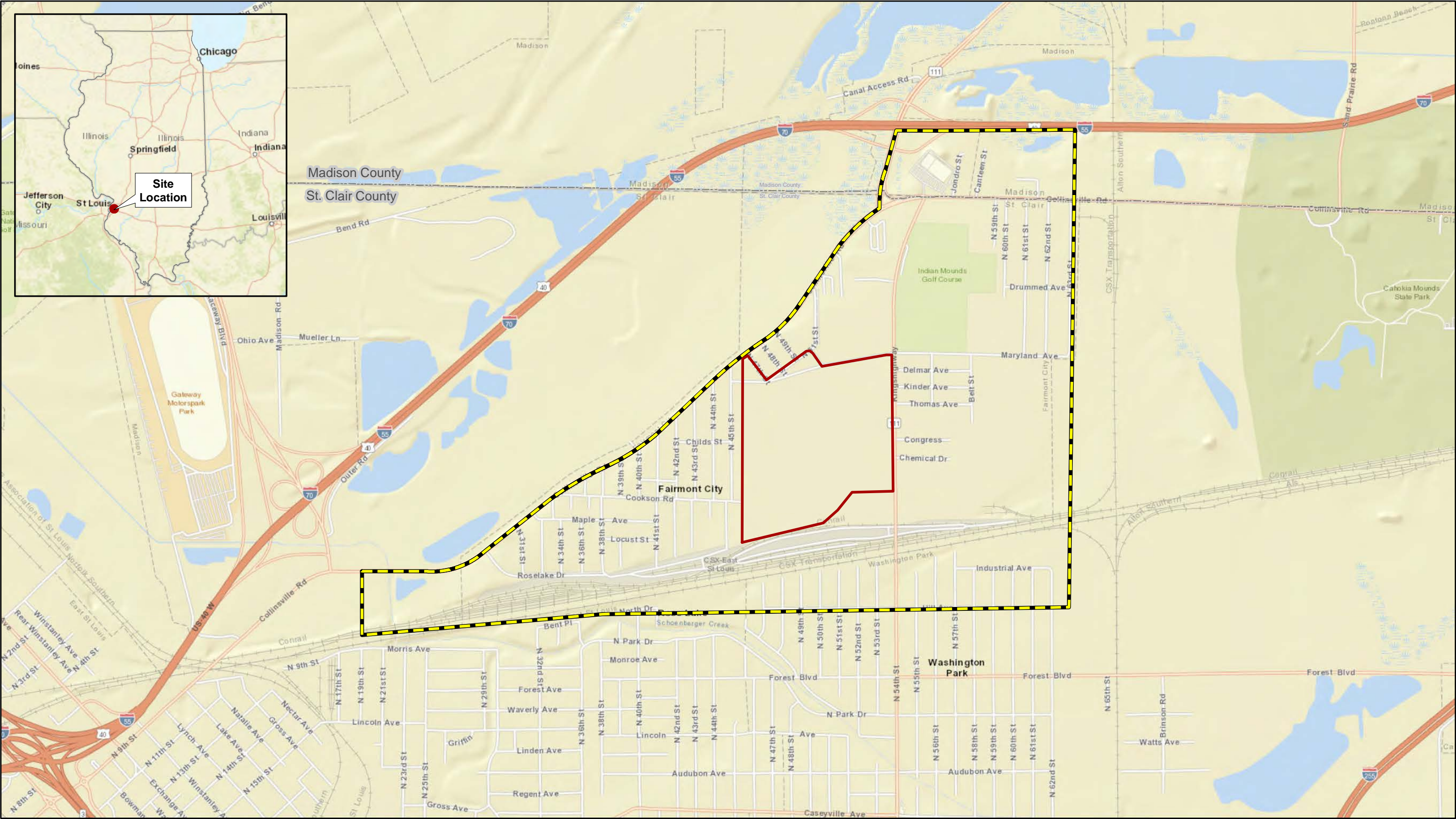
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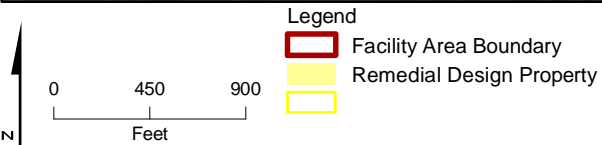
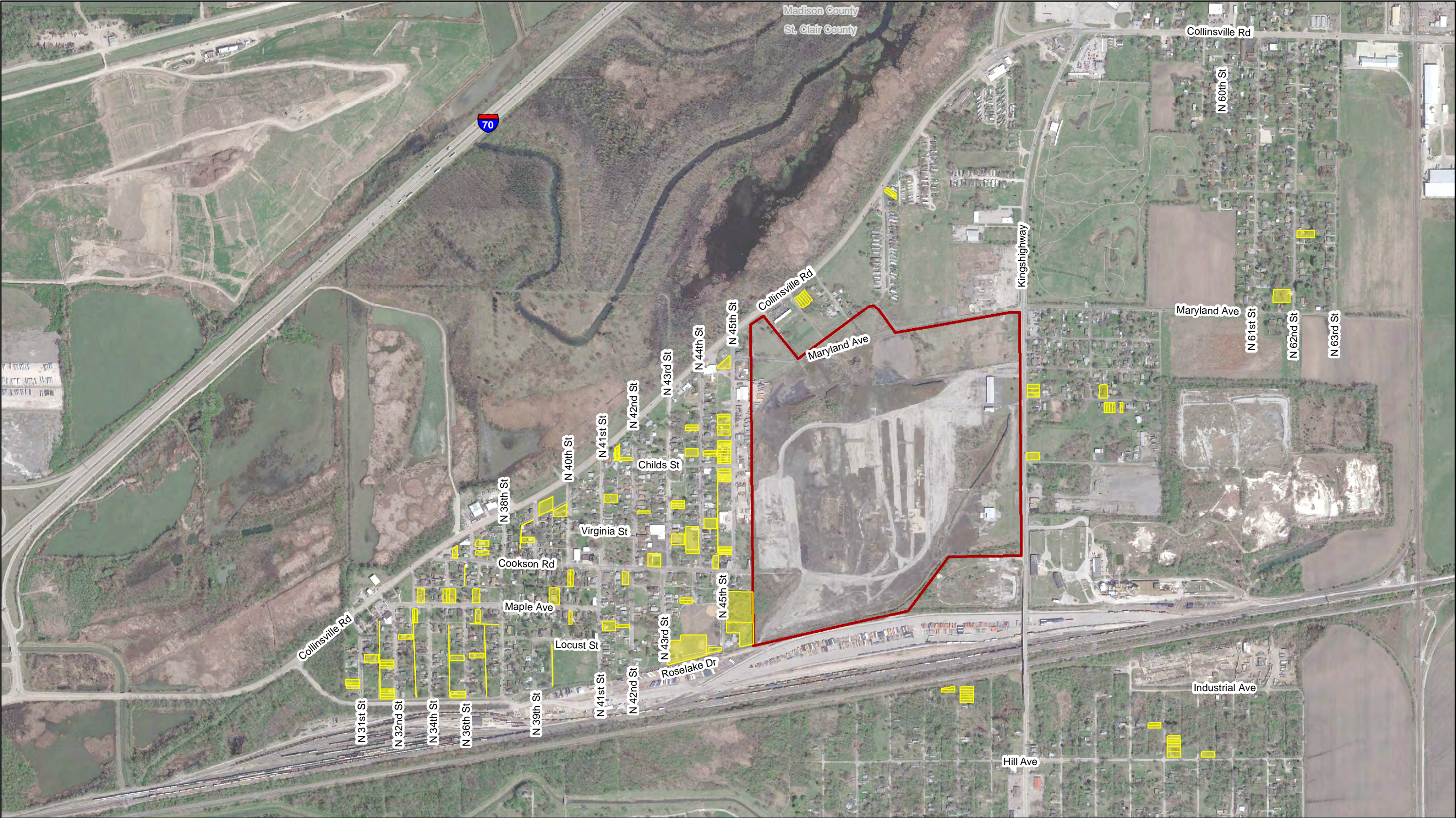
U.S. National Archives and Records Administration. *40 Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste*.

Figures



Notes:
1. Basemap provided by ArcGIS Online World Street Map.

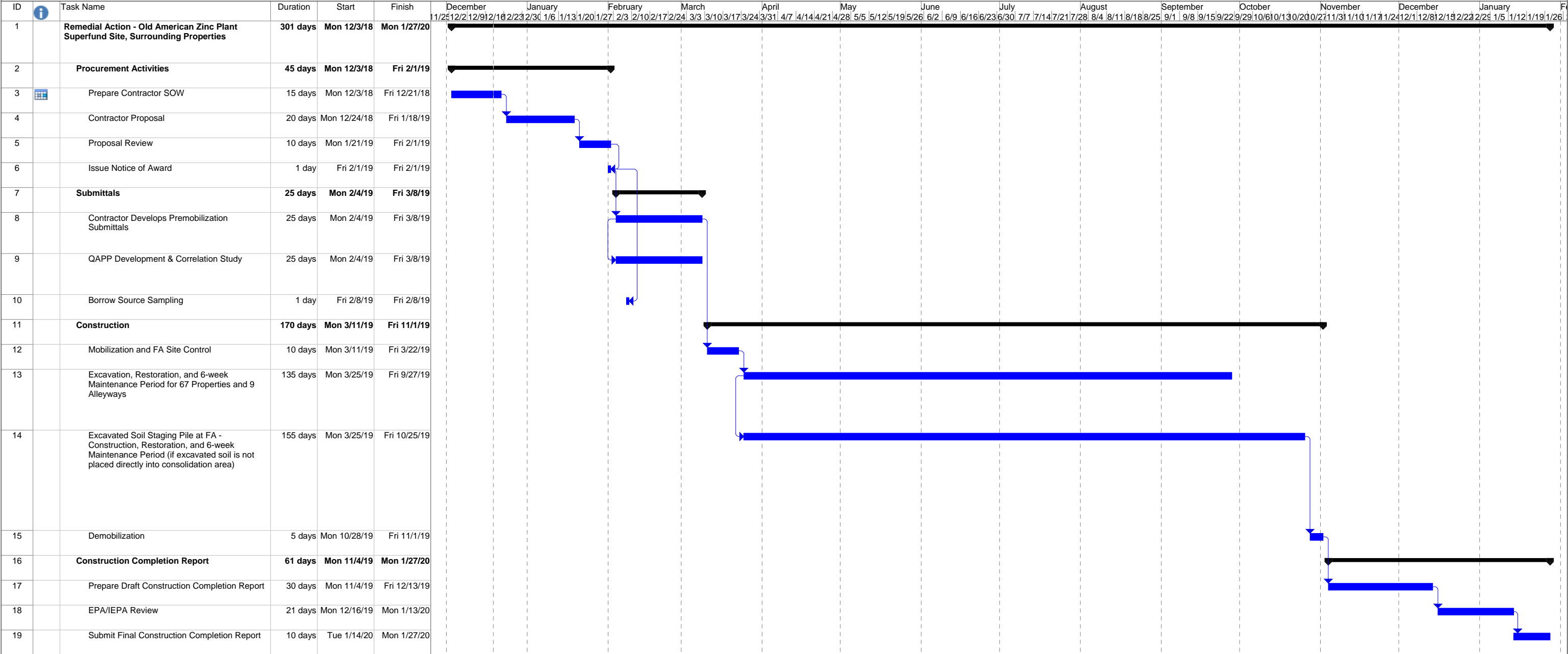
Figure 1-1
Site Location Map
Old American Zinc Plant Superfund Site
Fairmont City, Illinois



Notes:
1. Google earth Imagery Date: 4/2/2016.

Figure 3-1
Properties and Alleyways to be Remediated
Old American Zinc Plant Superfund Site
Fairmont City, Illinois

Figure 5-1 Old American Zinc Remedial Action Schedule



Old American Zinc Final RA Schedule
Note: Dates are estimated; actual RA start date is TBD.
Date: Wed 12/19/18

Task

Split

Milestone

Summary

Project Summary

External Tasks

External Milestone

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Progress

Deadline

Appendix A

Final Design Drawings

US ENVIRONMENTAL PROTECTION AGENCY
OLD AMERICAN ZINC SUPERFUND SITE
SURROUNDING PROPERTIES REMEDIAL DESIGN
FAIRMONT CITY, ST. CLAIR COUNTY, ILLINOIS

INDEX TO FIGURES

FIGURE
NO.

TITLE

FIGURE
NO.

TITLE

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G-002 PROPERTIES AND ALLEYWAYS TO BE REMEDIATED
G-003 PROPERTIES AND ALLEYWAYS TO BE REMEDIATED
G-004 LEGEND
G-005 PROPOSED STOCKPILE AND STAGING AREAS
C-001 NORTH 31ST STREET
C-002 NORTH 31ST STREET
C-003 NORTH 32ND STREET
C-004 NORTH 32ND STREET
C-005 NORTH 32ND STREET
C-006 NORTH 36TH STREET
C-007 AND 2507 NORTH 36TH STREET
C-008 NORTH 36TH STREET
C-009 NORTH 37TH STREET
C-010 NORTH 37TH STREET
C-011 NORTH 39TH STREET
C-012 NORTH 40TH STREET
C-013 NORTH 41ST STREET
C-014 NORTH 41ST STREET
C-015 NORTH 42ND STREET (02-09.0-106-056)
C-016 NORTH 42ND STREET
C-017 NORTH 42ND STREET
C-018 NORTH 43RD STREET (02-04.0-313-029)
C-019 NORTH 43RD STREET (02-04.0-313-013)
C-020 NORTH 43RD STREET (02-04.0-313-014 AND 02-04.0-313-015)
C-021 NORTH 44TH STREET (02-04.0-307-056)
C-022 NORTH 44TH STREET (02-09.0-108-069)
C-023 NORTH 44TH STREET
C-024 NORTH 44TH STREET
C-025 NORTH 44TH STREET
C-026 NORTH 44TH STREET
C-027 NORTH 44TH STREET
C-028 NORTH 44TH STREET
C-029 NORTH 45TH STREET (02-04.0-314-066 AND 02-04.0-314-067)
C-030 NORTH 45TH STREET
C-031 NORTH 45TH STREET
C-032 NORTH 45TH STREET
C-033 NORTH 45TH STREET
C-034 NORTH 45TH STREET
C-035 NORTH 45TH STREET

- C-036 NORTH 45TH STREET
C-037 NORTH 45TH STREET AND NORTH 45TH STREET (02-04.0-308-064)
C-038 NORTH 52ND STREET AND NORTH 52ND STREET
C-039 NORTH 52ND STREET AND NORTH 52ND STREET (02-C9.0-205-031)
C-040 NORTH 58TH STREET AND 2306 NORTH 58TH STREET
C-041 NORTH 58TH STREET
C-042 NORTH 59TH STREET
C-043 NORTH 62ND STREET
C-044 NORTH 62ND STREET
C-045 COLLINSVILLE ROAD (02-04.0-203-007 AND 02-04.0-203-008)
C-046 COLLINSVILLE ROAD
C-047 COLLINSVILLE ROAD
C-048 COLLINSVILLE ROAD
C-049 COOKSON ROAD
C-050 COOKSON ROAD
C-051 COOKSON ROAD
C-052 COOKSON ROAD
C-053 COOKSON ROAD
C-054 KINGSHIGHWAY (02-03.0-308-011)
C-055 KINGSHIGHWAY AND KINGSHIGHWAY (02-03.0-304-010)
C-056 MAPLE AVENUE (02-09.0-103-022)
C-057 MAPLE AVENUE
C-058 MAPLE AVENUE
C-059 MAPLE AVENUE
C-060 MAPLE AVENUE
C-061 MAPLE AVENUE
C-062 MAPLE AVENUE
C-063 MAPLE AVENUE
C-064 THOMAS AVENUE
C-065 THOMAS AVENUE
C-066 THOMAS AVENUE (02-03.0-307-005, 02-03.0-307-006, 02-03.0-307-007, AND 02-03.0-307-008)
C-067 THOMAS AVENUE (02-03.0-307-011)
C-068 ALLEY 01
C-069 ALLEY 03
C-070 ALLEY 06
C-071 ALLEY 07
C-072 ALLEY 08
C-073 ALLEY 10
C-074 ALLEY 15
C-075 ALLEY 16
C-076 ALLEY AT1-S

ch2m

GENERAL
TITLE, LOCATION MAPS
AND INDEX TO FIGURES

US ENVIRONMENTAL PROTECTION AGENCY
OLD AMERICAN ZINC SUPERFUND SITE
SURROUNDING PROPERTIES REMEDIAL DESIGN
FAIRMONT CITY, ST. CLAIR COUNTY, ILLINOIS

FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON
ORIGINAL DRAWING, 1"

| | |
|-------|----------|
| DATE | DEC 2018 |
| PROJ | 687729 |
| DWG | G-001 |
| SHEET | 1 of 81 |

CH2M
MATTHEW D. GAVIN
LIC. NO. 062-056650

Matthew D. Gavin

DATE: 12/20/18

SIGNATURE AND SEAL APPLY TO
ALL SHEETS 1 - 81 OF 81



EXPIRATION DATE: 11/30/2019

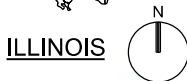
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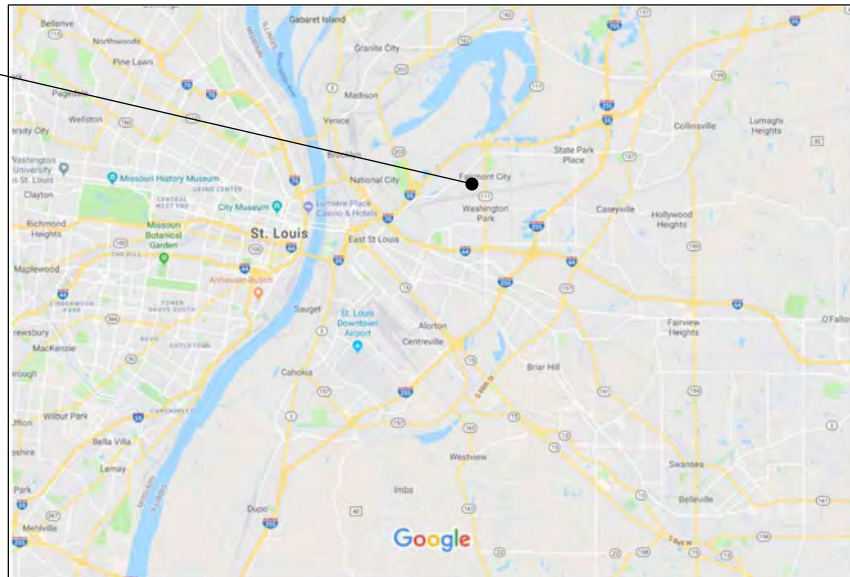
PLOT TIME: 3:27:57 PM



PROJECT LOCATION
ST. CLAIR COUNTY



PROJECT LOCATION
FAIRMONT CITY

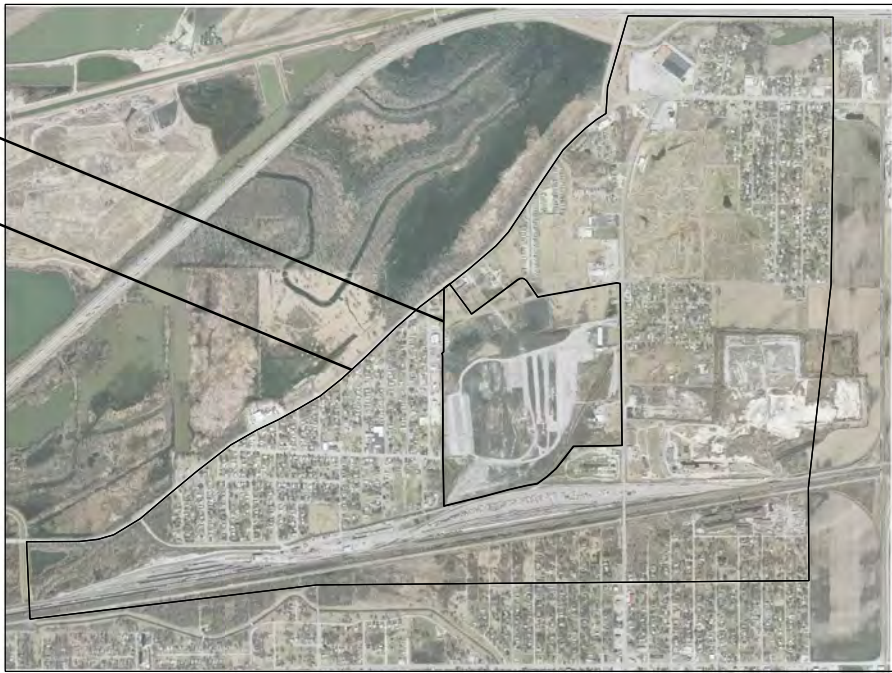


VICINITY MAP
NTS



PROJECT LOCATION
FACILITY BOUNDARY

PROJECT LOCATION
SURROUNDING
PROPERTIES



LOCATION MAP
NTS



\$PWURL

\$PWPATH

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FIGURE G-002
PROPERTIES AND ALLEYWAYS TO BE REMEDIATED
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

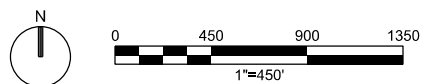





















FIGURE G-003
PROPERTIES AND ALLEYWAYS TO BE REMEDIATED
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

LEGEND

| | | | |
|---|--------------------|---|--------------------------|
|  | TREE |  | ROAD OR SIDEWALK |
|  | SHRUB |  | BUILDING (MAJOR & MINOR) |
|  | TREE STUMP |  | GARDEN |
|  | ITEM TO BE REMOVED |  | LOT DIVIDE |
|  | EXCAVATION |  | PROPERTY LINE |
| | |  | EXCAVATION LIMITS |
| | |  | TREE DRIP LINE |
| | |  | WOOD FENCE |
| | |  | CHAIN LINK FENCE |
| | |  | WROUGHT IRON FENCE |
| | |  | VINYL/DECORATIVE FENCE |

ABBREVIATIONS

| | |
|--|---|
| A/C | AIR CONDITIONER |
| CY | CUBIC YARDS |
| DIA,  | DIAMETER |
| MAX | MAXIMUM |
| MIN | MINIMUM |
| (TYP) | TYPICAL |
| USEPA | UNITED STATES ENVIRONMENTAL PROTECTION AGENCY |

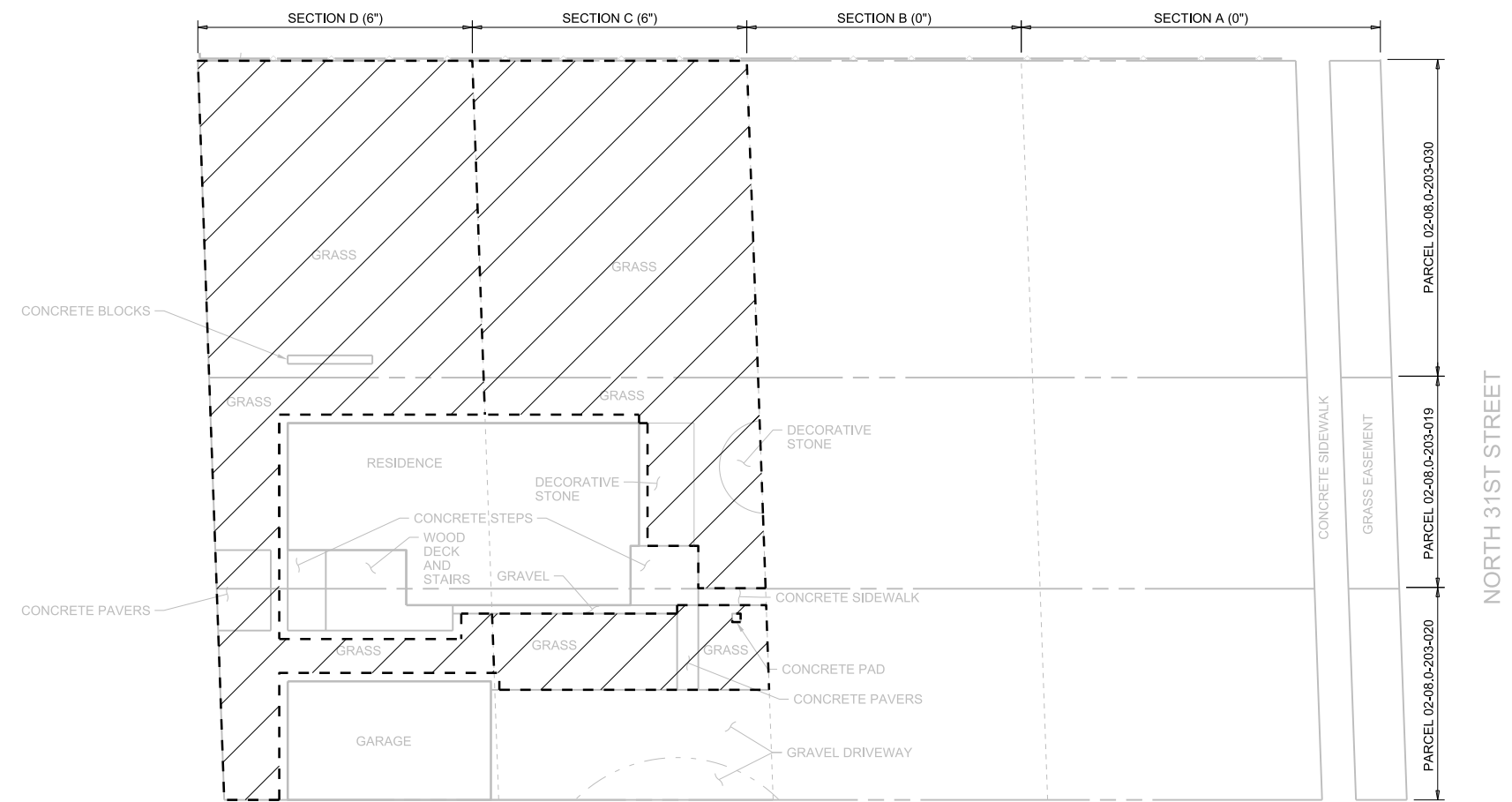
GENERAL SITE NOTES:

- 1) TREES AND SHRUBS WILL BE REPLACED WITH TREES AND SHRUBS OF SIMILAR SPECIES AND QUANTITIES REMOVED. REPLACEMENT TREES WILL BE 2-INCH CALIPER TREES OF SAME SPECIES AS PRACTICABLE.
- 2) WORK SHOWN ON DRAWINGS TO BE COMPLETED ACCORDING TO SPECIFICATIONS.
- 3) YARD AREA NOMENCLATURE SHOWN ON DRAWINGS IS BASED ON NAMING CONVENTIONS FROM SAMPLING EVENTS PERFORMED BY CH2M AND ENTACT.
- 4) UNDERGROUND AND OVERHEAD UTILITIES ARE NOT SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE PRIOR TO CONSTRUCTION.
- 5) TOTAL EXCAVATION VOLUME SHOWN ON DRAWINGS ASSUMES A 4-INCH EXCAVATION DEPTH WITHIN TREE DRIP ZONES; HOWEVER, EXCAVATION WILL BE PERFORMED TO THE FULL EXCAVATION DEPTH IDENTIFIED IN THE DRAWINGS, TO THE EXTENT POSSIBLE.

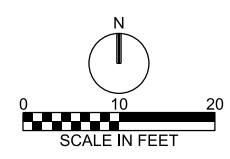
FIGURE G-004 LEGEND

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1





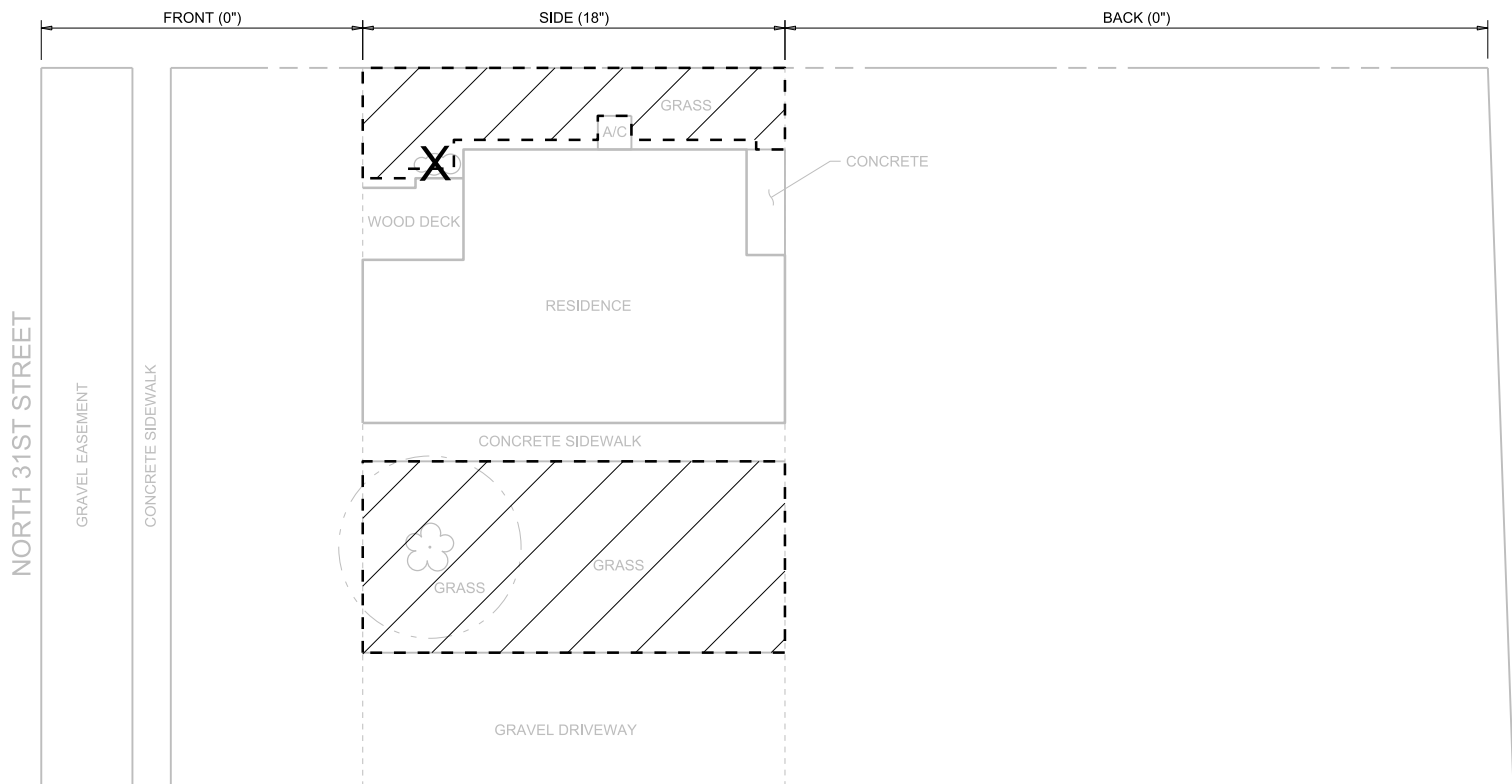
- NOTES:
1. **PARCEL ID(S): 02-08.0-203-019, 02-08.0-203-020, AND 02-08.0-203-030.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION C AND 6 INCHES IN SECTION D.
 3. TOTAL EXCAVATION IS: 67 CY
 4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS. IN GARDEN AREA, ONE FOOT WIDE MANUAL EXCAVATION ALONG RESIDENCE.
 5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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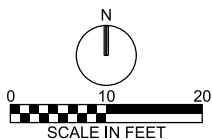
FIGURE C-001
 NORTH 31ST STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1





NOTES:

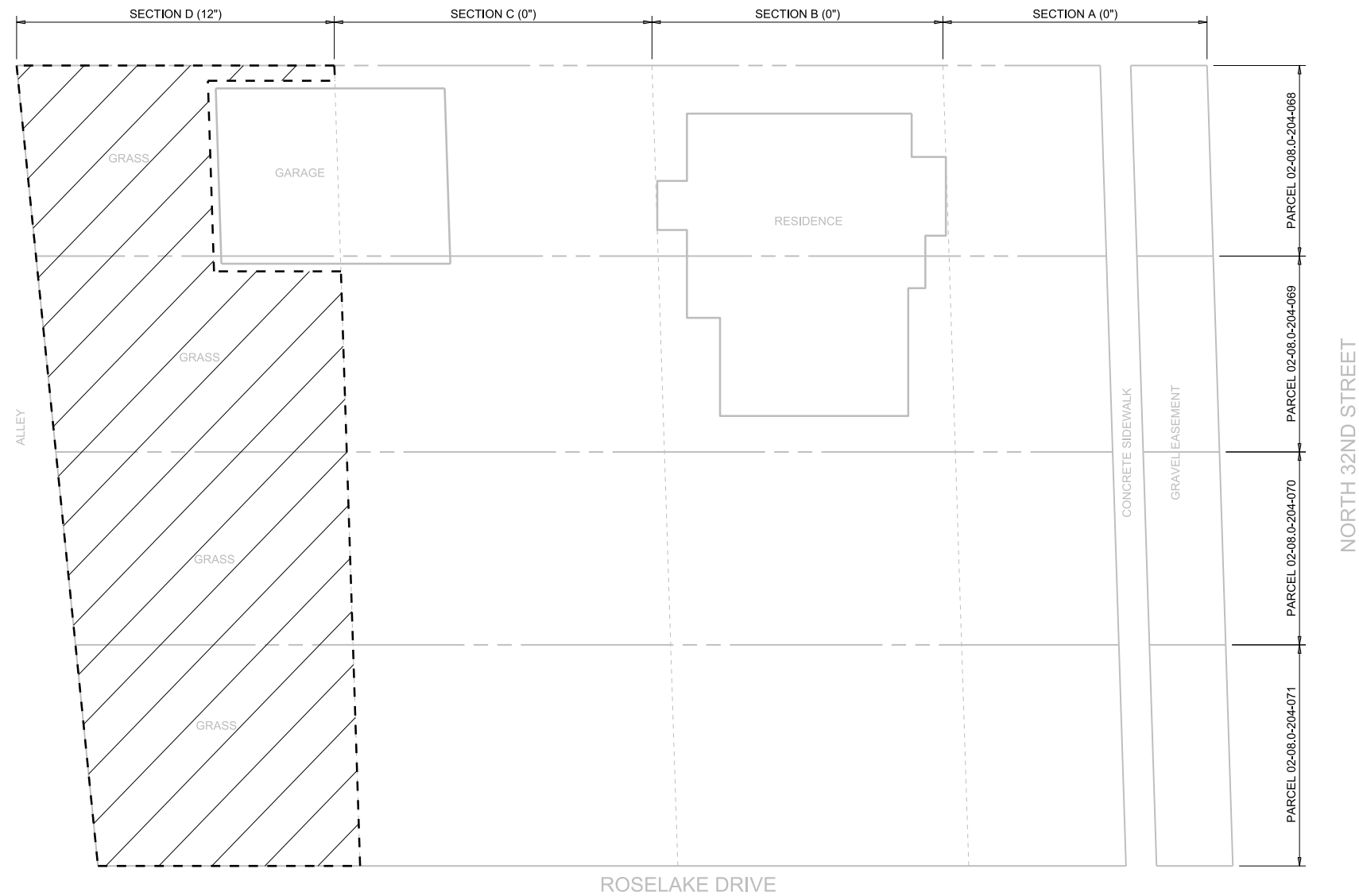
1. **PARCEL ID(S): 02-08.0-204-075.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN THE SIDE.
3. TOTAL EXCAVATION IS: 55 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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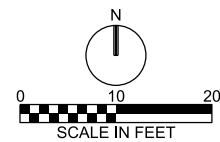
FIGURE C-002
██████ NORTH 31ST STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



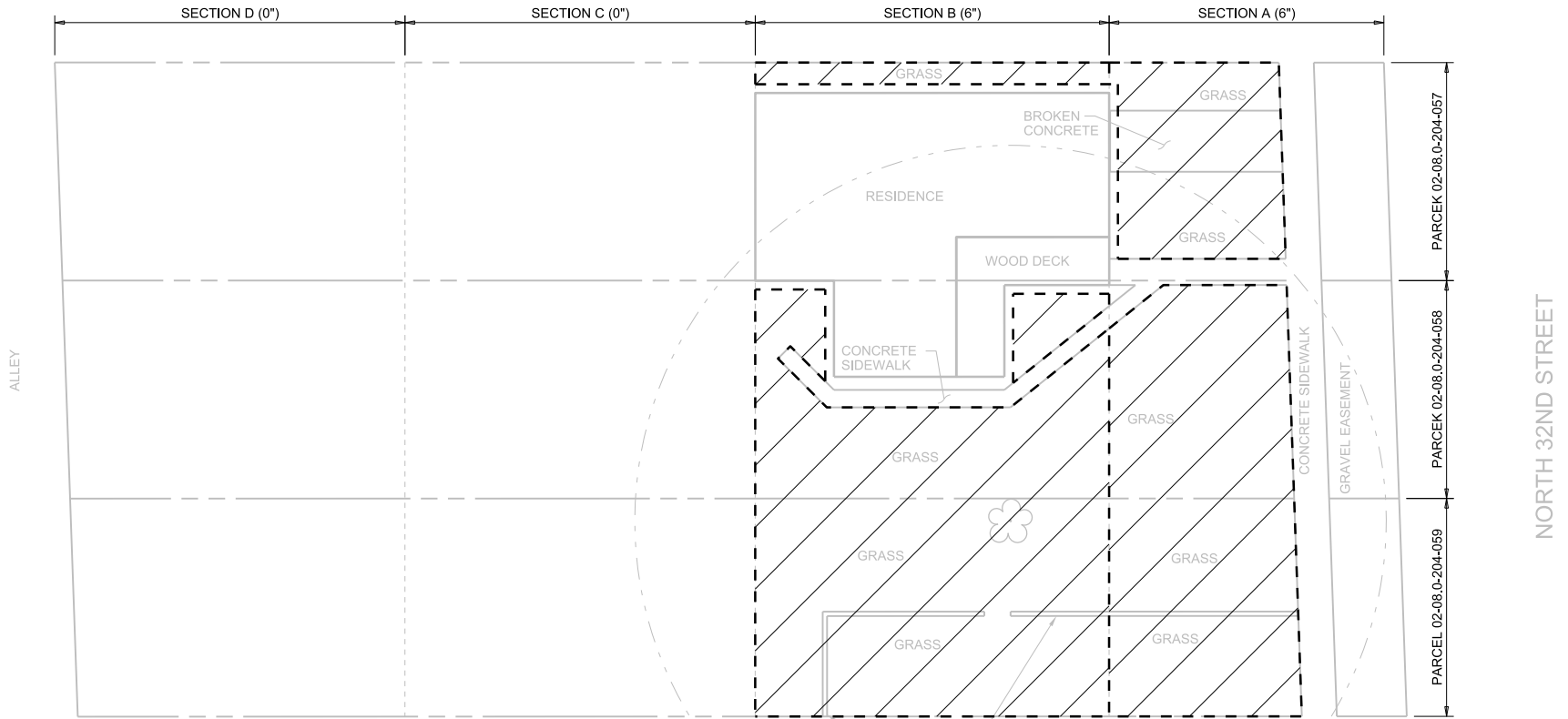
NOTES:

1. **PARCEL ID(S): 02-08.0-204-068, 02-08.0-204-069, 02-08.0-204-070, AND 02-08.0-204-071.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 131 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



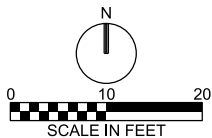
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FIGURE C-003
NORTH 32ND STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

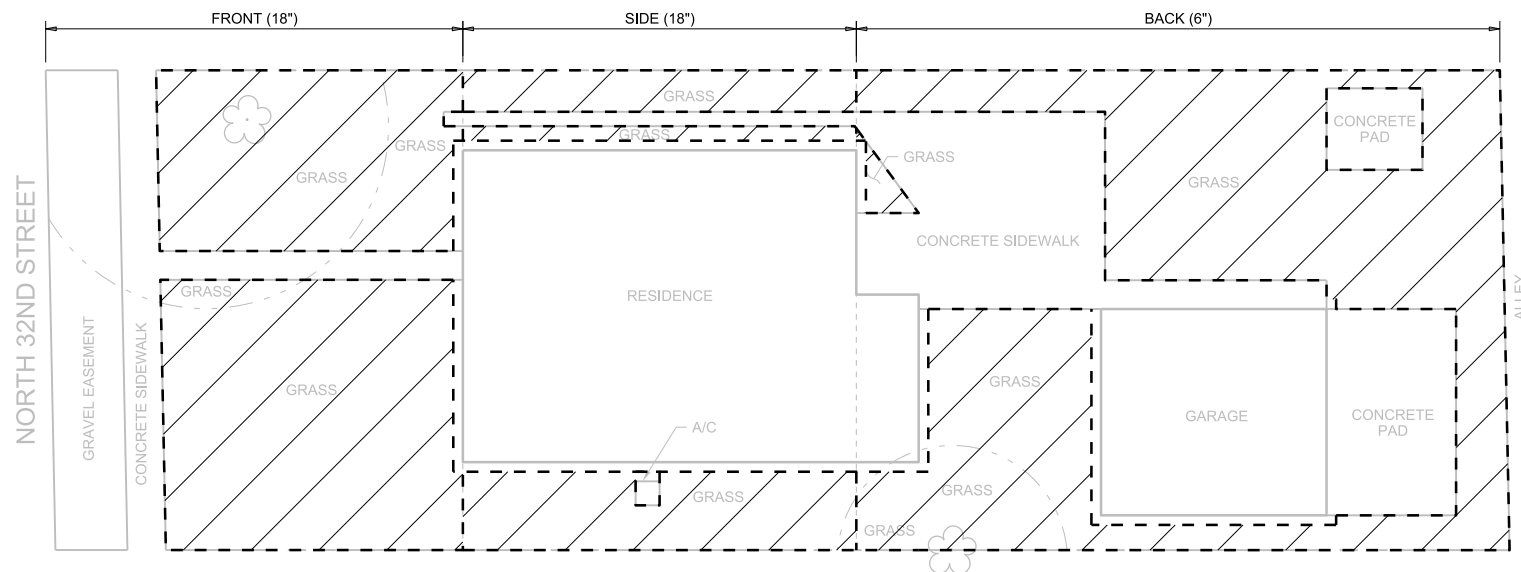
1. **PARCEL ID(S): 02-08.0-204-057, 02-08.0-204-058, AND 02-08.0-204-059.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION A AND 6 INCHES IN SECTION B.
3. TOTAL EXCAVATION IS: 41 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES (E.G. FENCING) MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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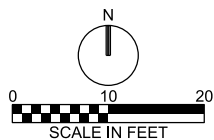
FIGURE C-004
██████ NORTH 32ND STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

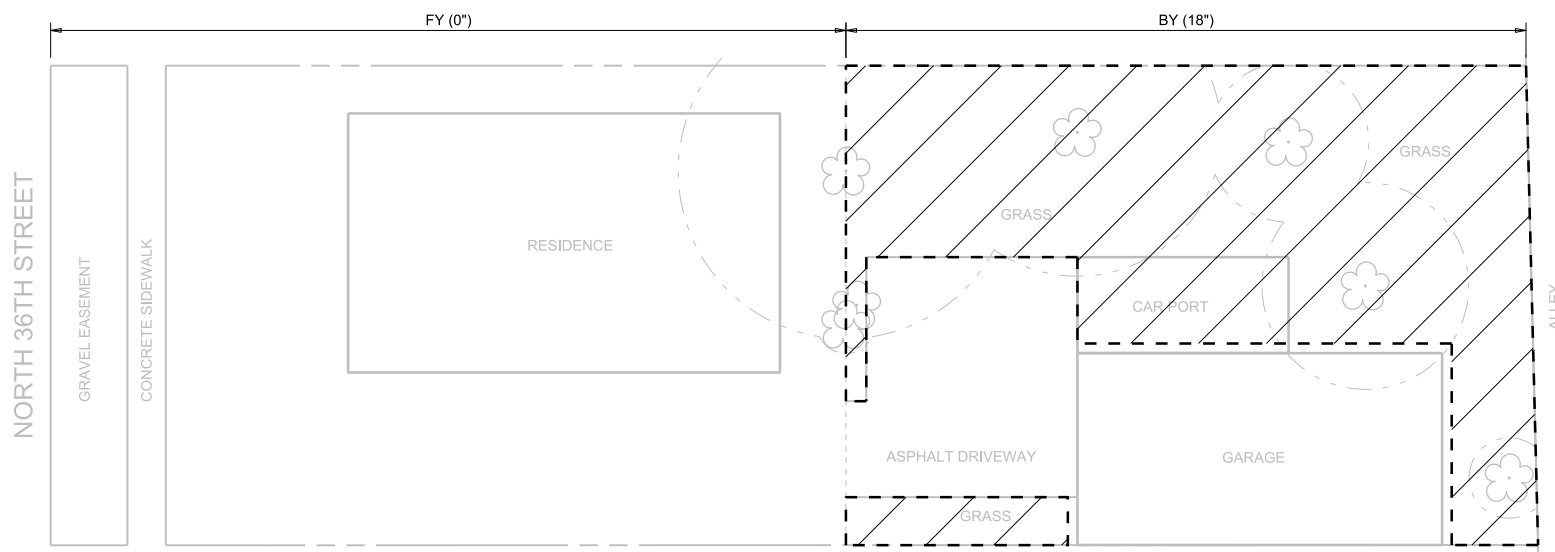
1. **PARCEL ID(S): 02-08.0-205-072.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN THE FRONT, 18 INCHES IN THE SIDE, AND 6 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 110 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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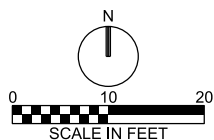
FIGURE C-005
████████ NORTH 32ND STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

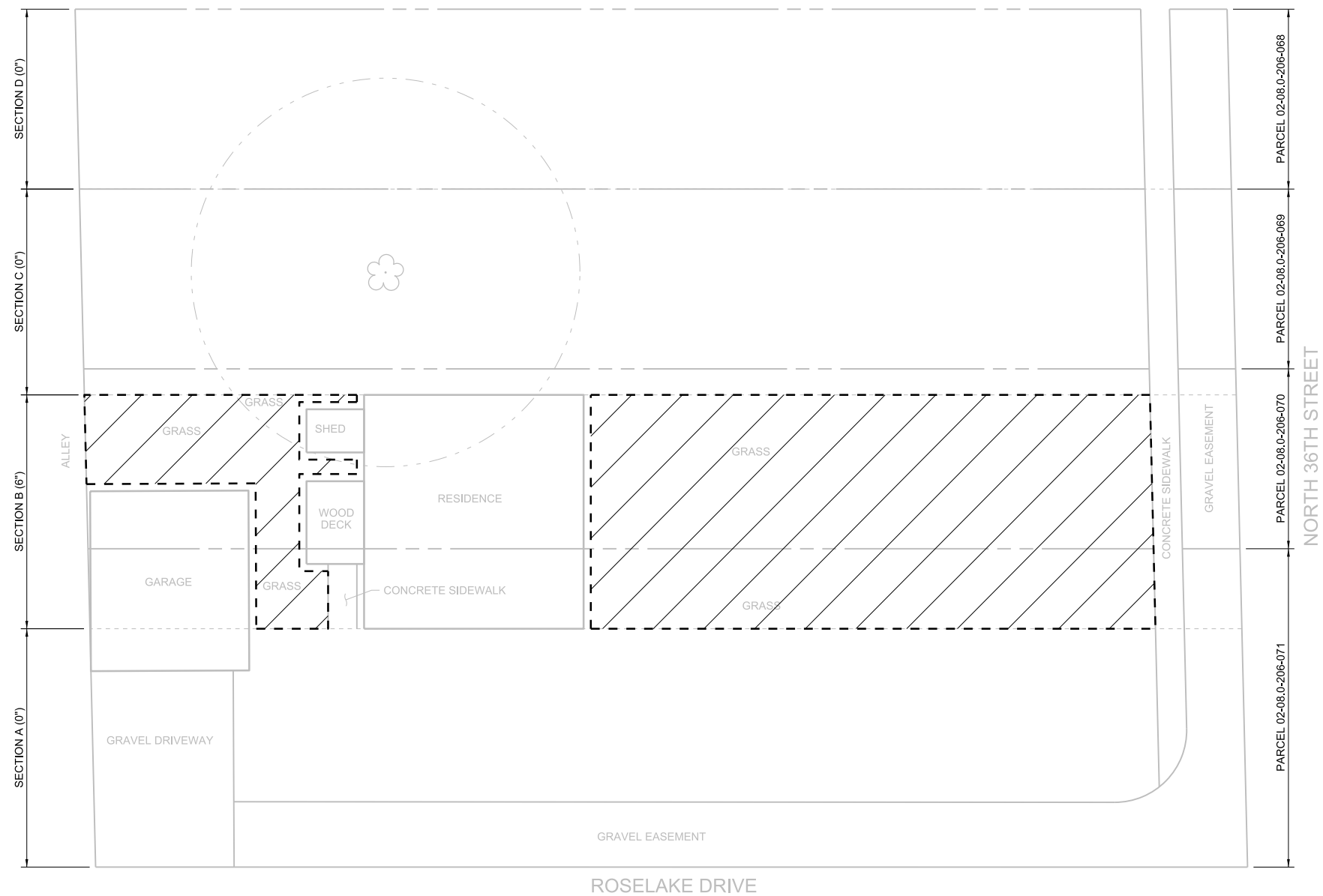
1. **PARCEL ID(S): 02-08.0-207-043.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN BY.
3. TOTAL EXCAVATION IS: 59 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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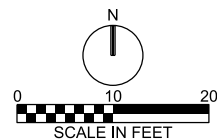
FIGURE C-006
NORTH 36TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

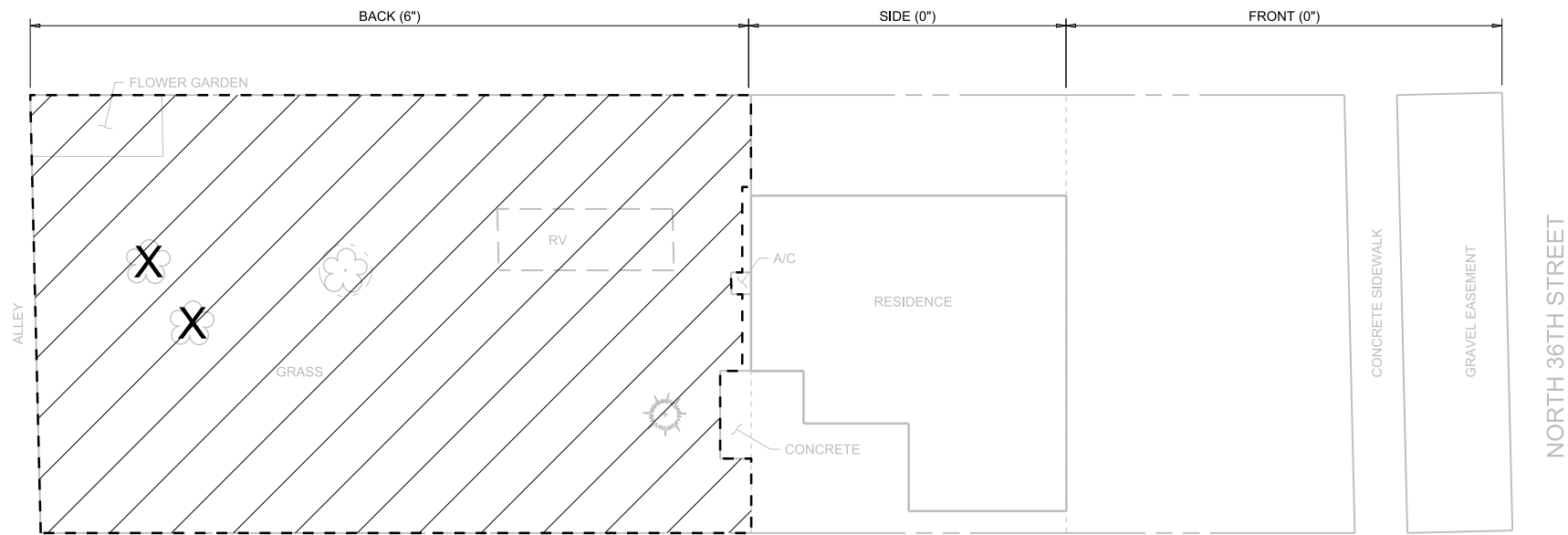
1. **PARCEL ID(S): 02-08.0-206-068, 02-08.0-206-069, 02-08.0-206-070, AND 02-08.0-206-071.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION B.
3. TOTAL EXCAVATION IS: 56 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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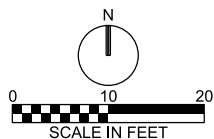
FIGURE C-007
[REDACTED] NORTH 36TH STREET
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1





NOTES:

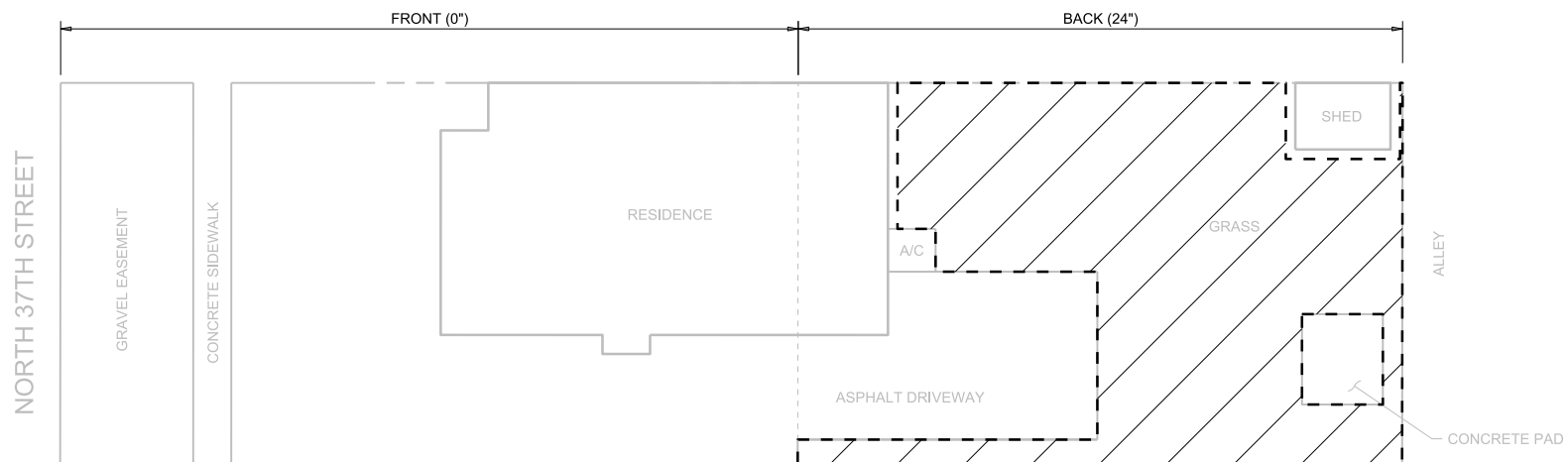
1. **PARCEL ID(S): 02-08.0-206-083.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 75 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



CONFIDENTIAL

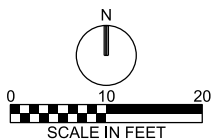
FIGURE C-008
██████████ NORTH 36TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



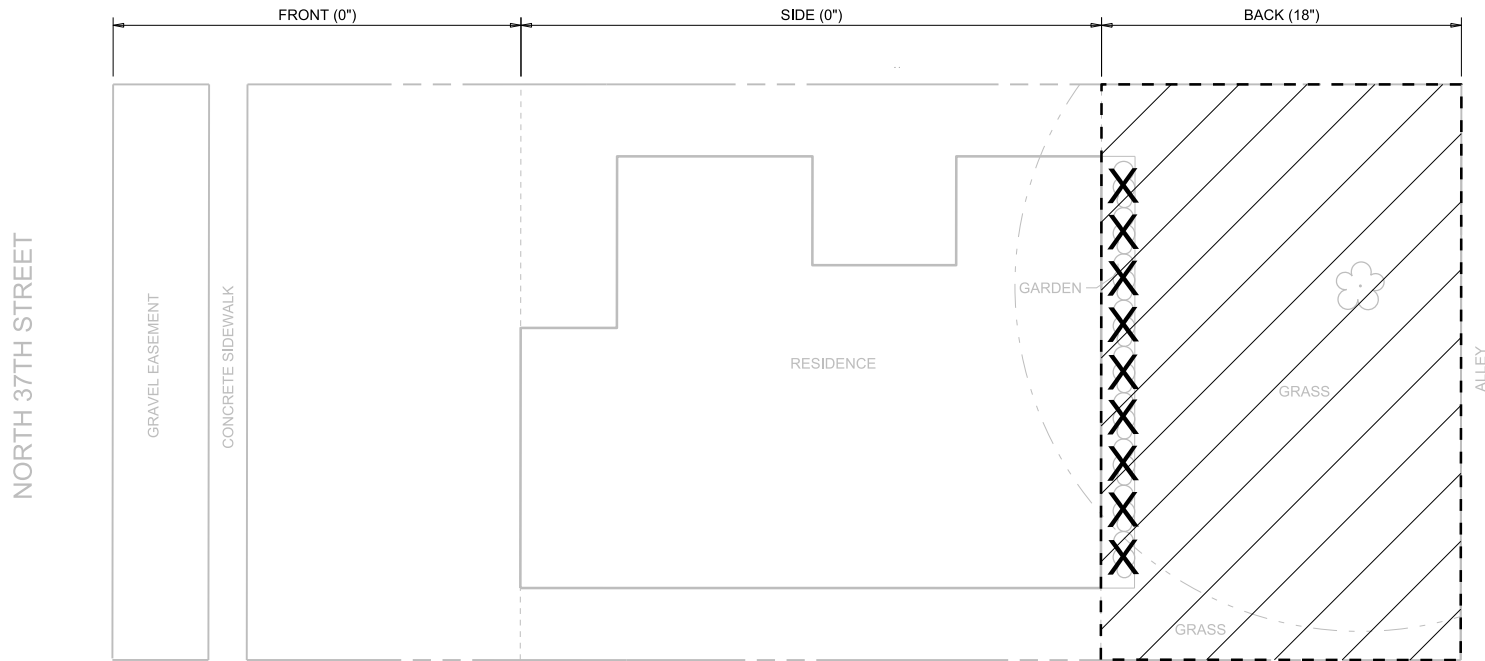
NOTES:

1. **PARCEL ID(S): 02-04.0-301-005.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 104 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



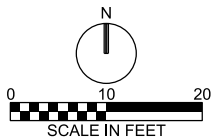
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FIGURE C-009
████████ NORTH 37TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



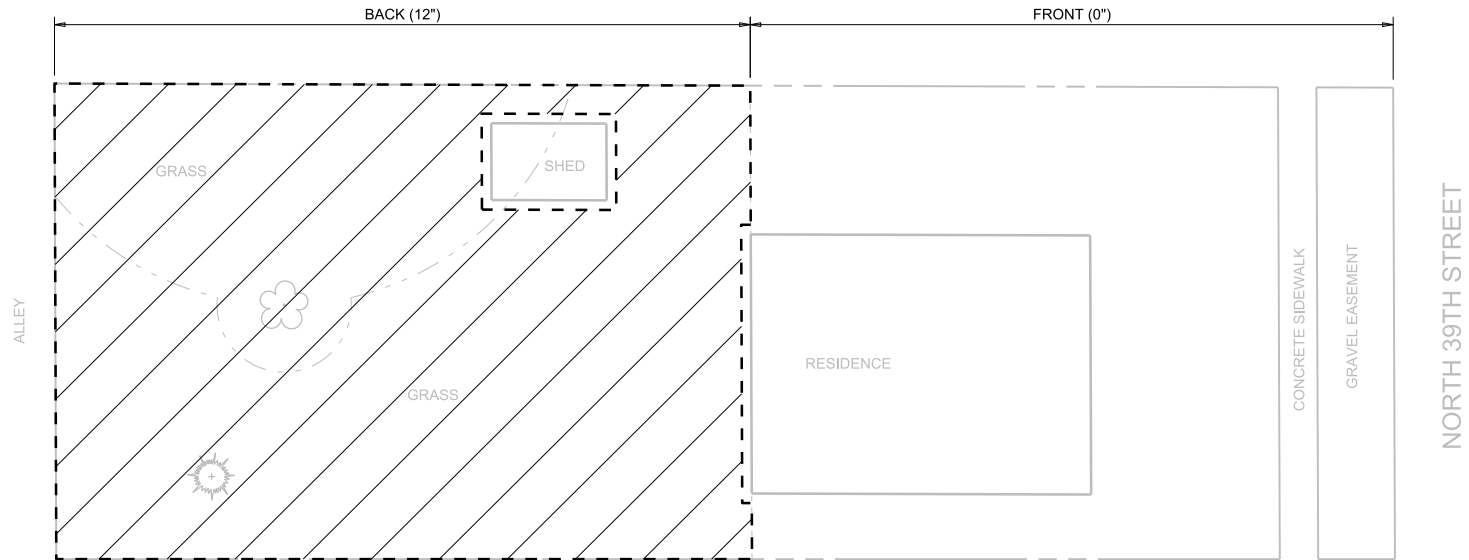
NOTES:

1. **PARCEL ID(S): 02-04.0-301-017.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 32 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS. IN GARDEN AREA, ONE FOOT WIDE MANUAL EXCAVATION ALONG RESIDENCE.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES (E.G. FENCING) MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



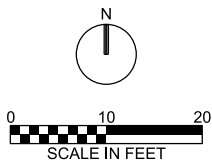
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FIGURE C-010
████████ NORTH 37TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-04.0-302-042.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 101 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

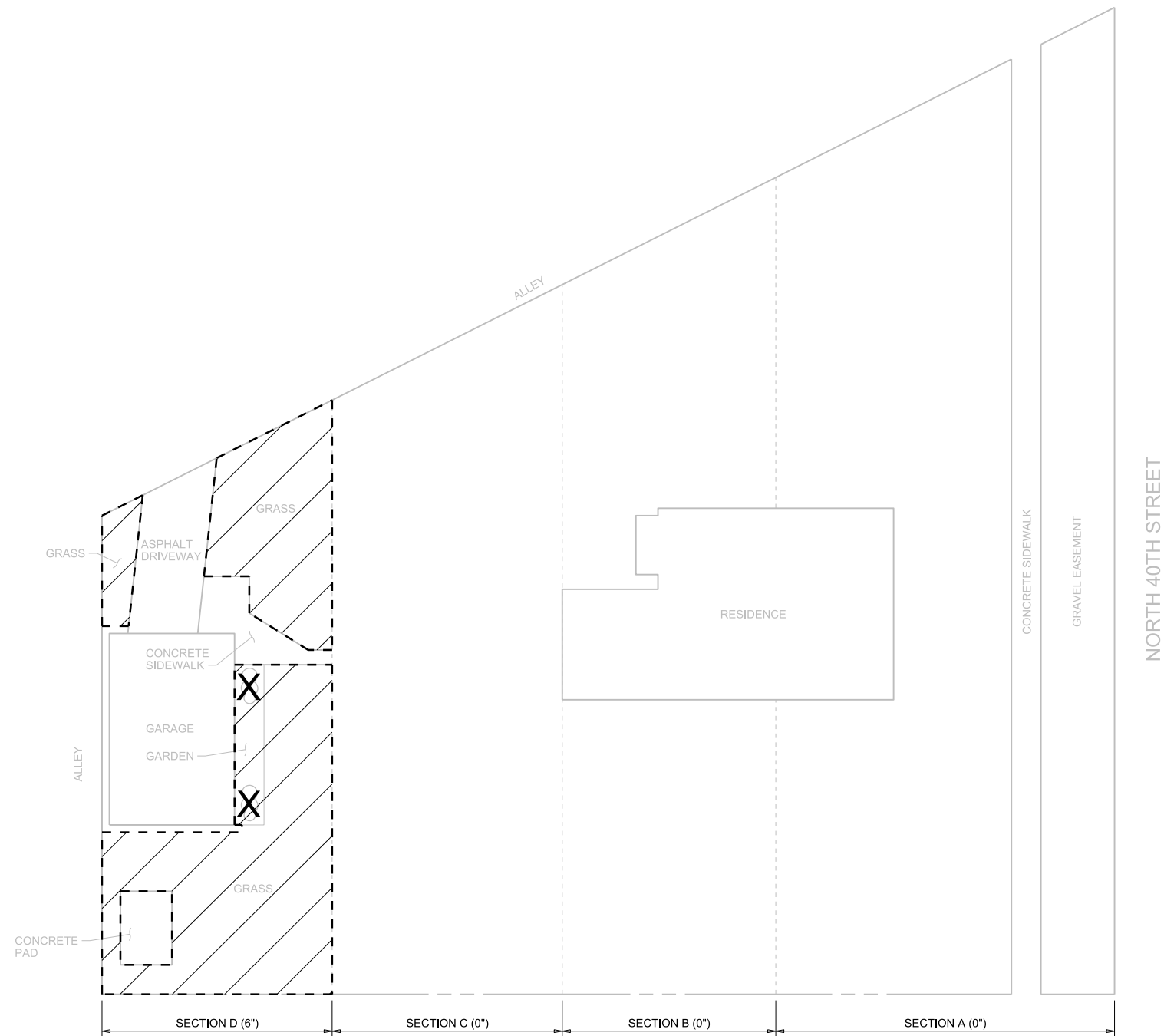


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FIGURE C-011
██████ NORTH 39TH STREET

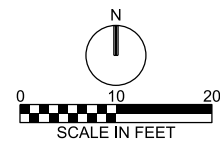
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

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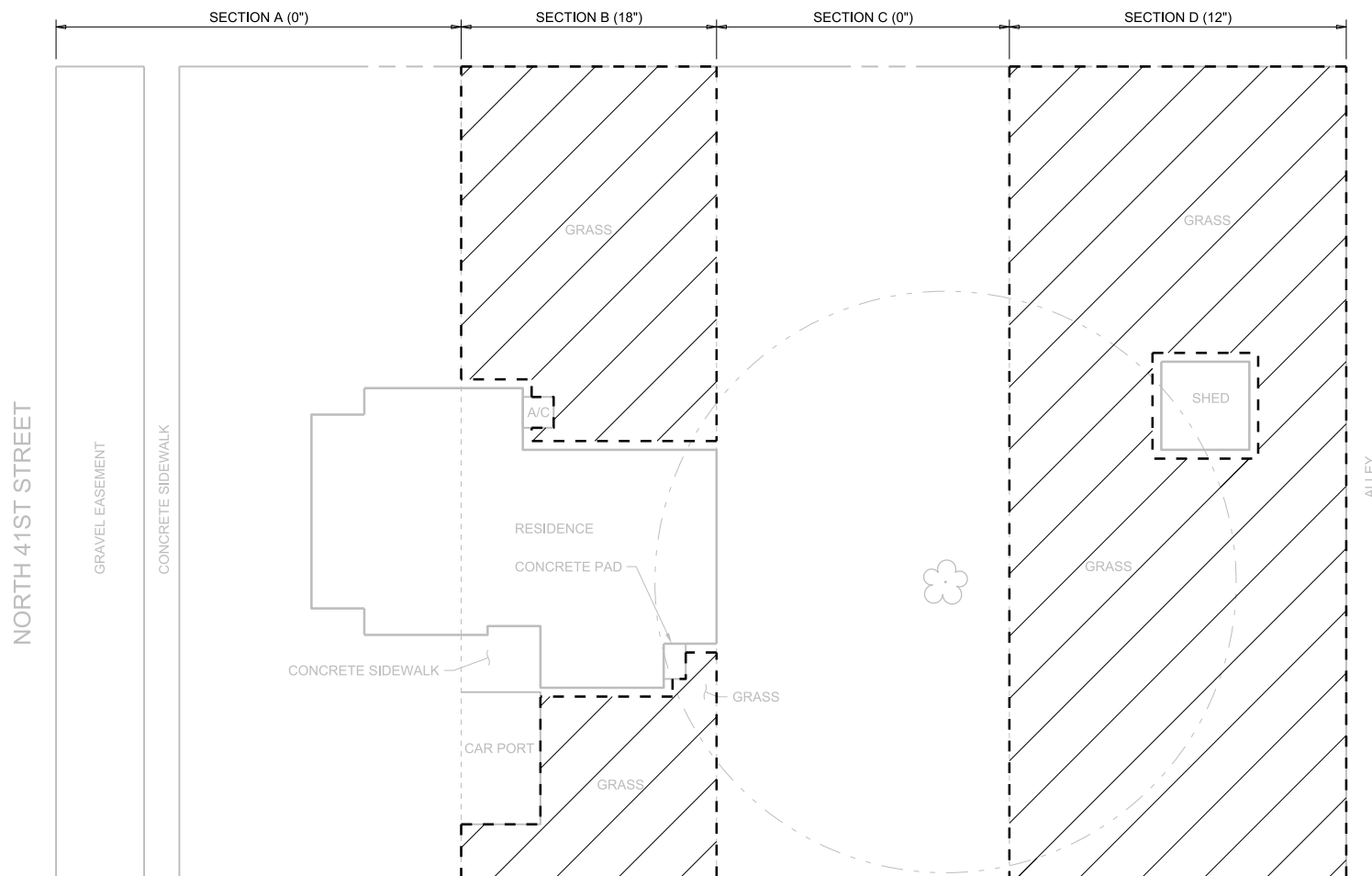
NOTES:

1. **PARCEL ID(S): 02-04.0-303-054.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 25 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS. IN GARDEN AREA, ONE FOOT WIDE MANUAL EXCAVATION ALONG GARAGE.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



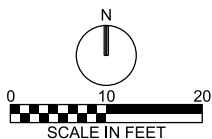
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FIGURE C-012
 NORTH 40TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



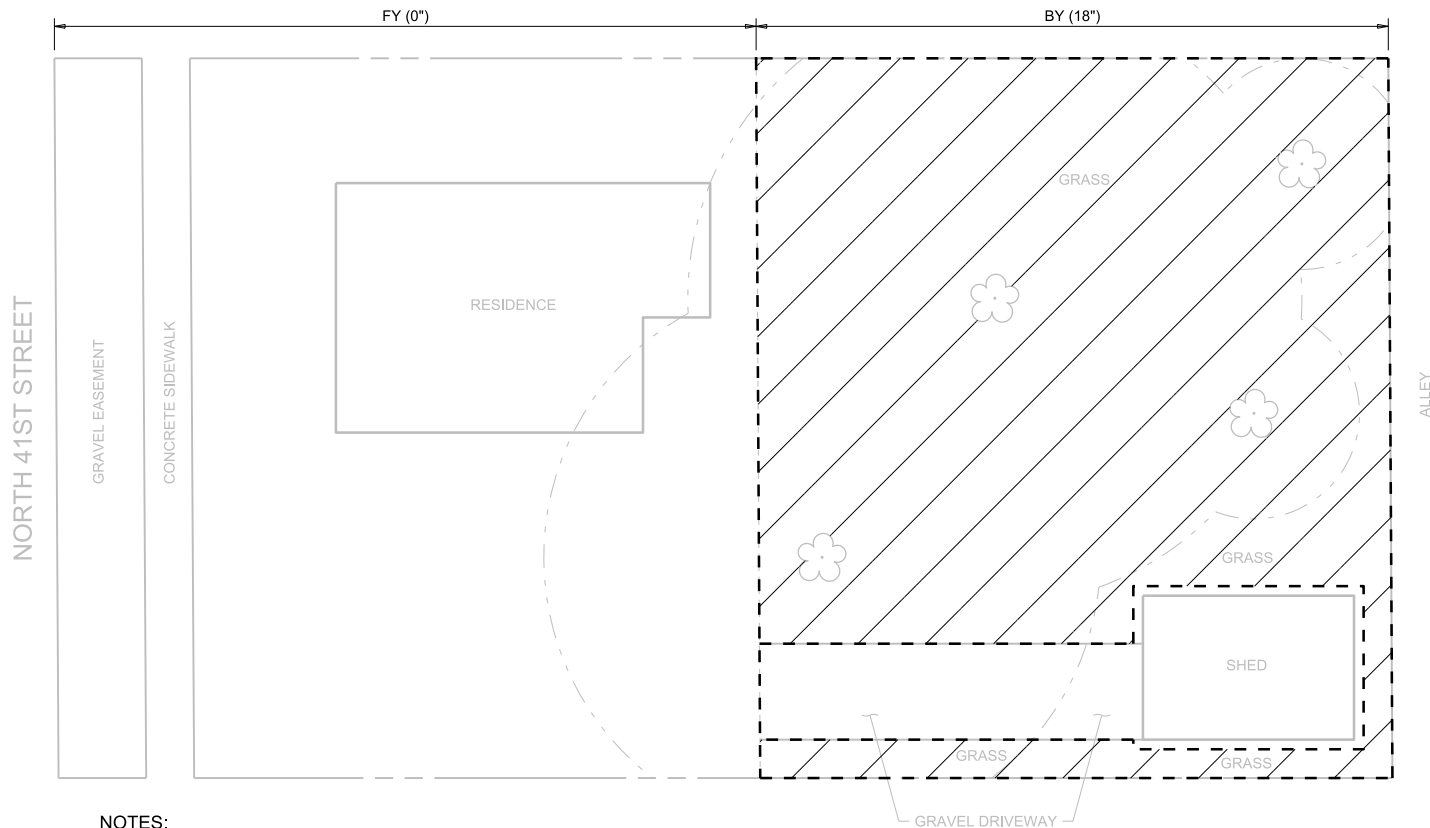
NOTES:

1. **PARCEL ID(S): 02-09.0-106-091.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN SECTION B AND 12 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 181 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



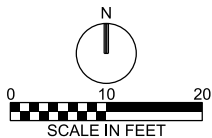
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FIGURE C-013
██████ NORTH 41ST STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



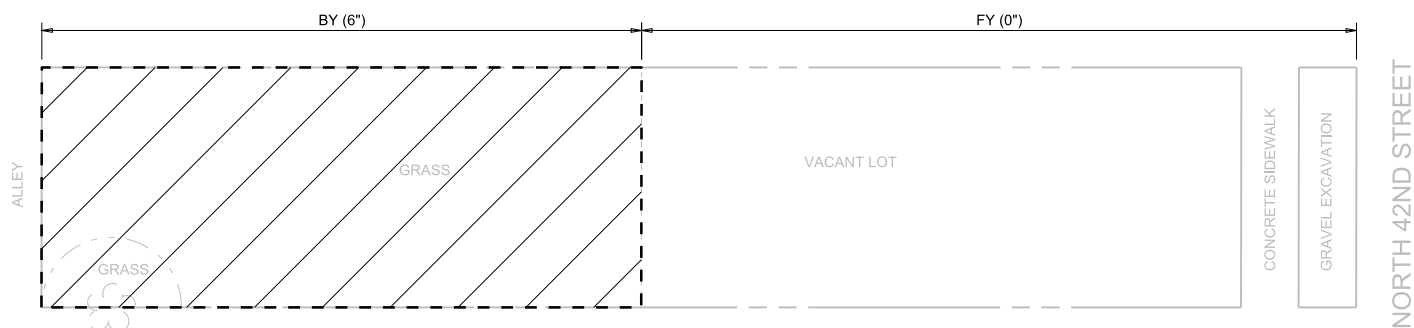
NOTES:

1. **PARCEL ID(S): 02-04.0-305-074.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN BY.
3. TOTAL EXCAVATION IS: 73 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



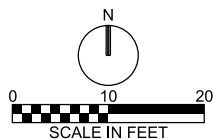
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FIGURE C-014
██████ NORTH 41ST STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

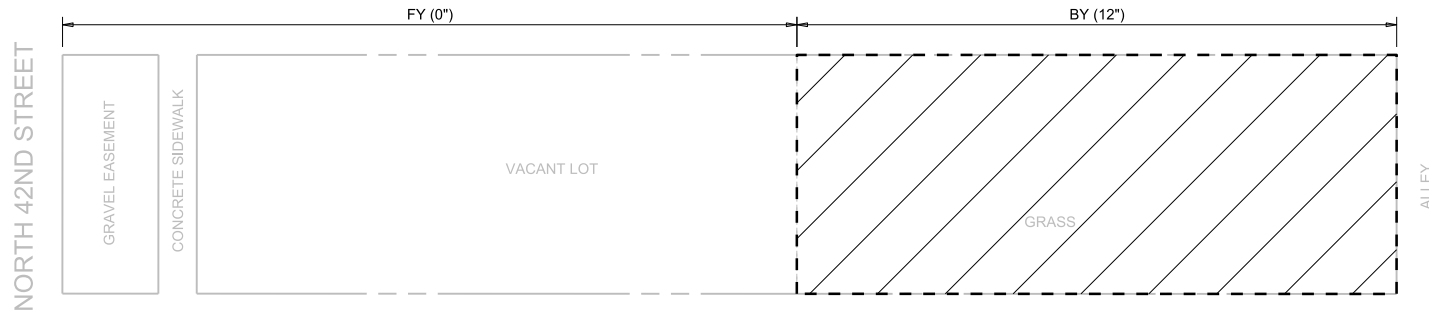
1. **PARCEL ID(S): 02-09.0-106-056.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 28 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017, HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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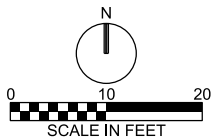
FIGURE C-015
NORTH 42ND STREET (02-09.0-106-056)

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-04.0-312-016.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 58 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017, HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.

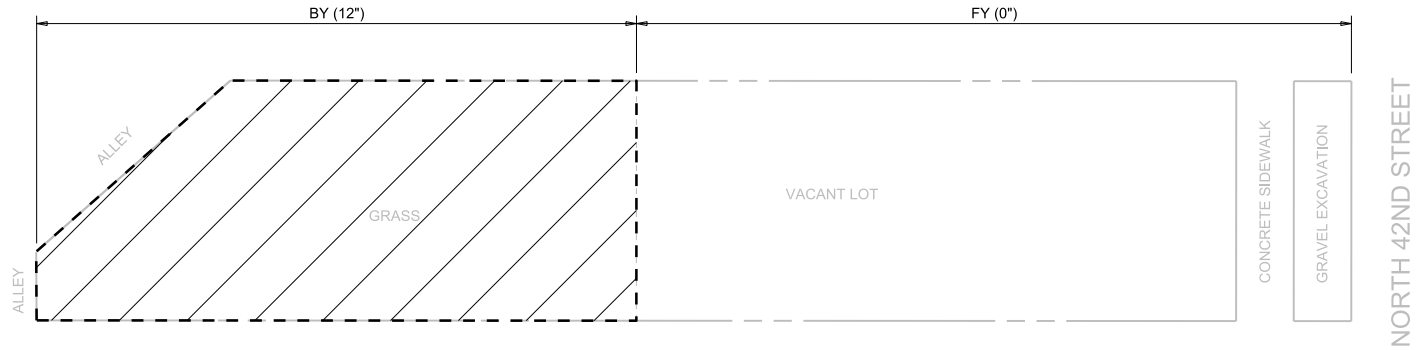


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FIGURE C-016
NORTH 42ND STREET

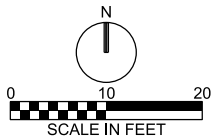
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

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NOTES:

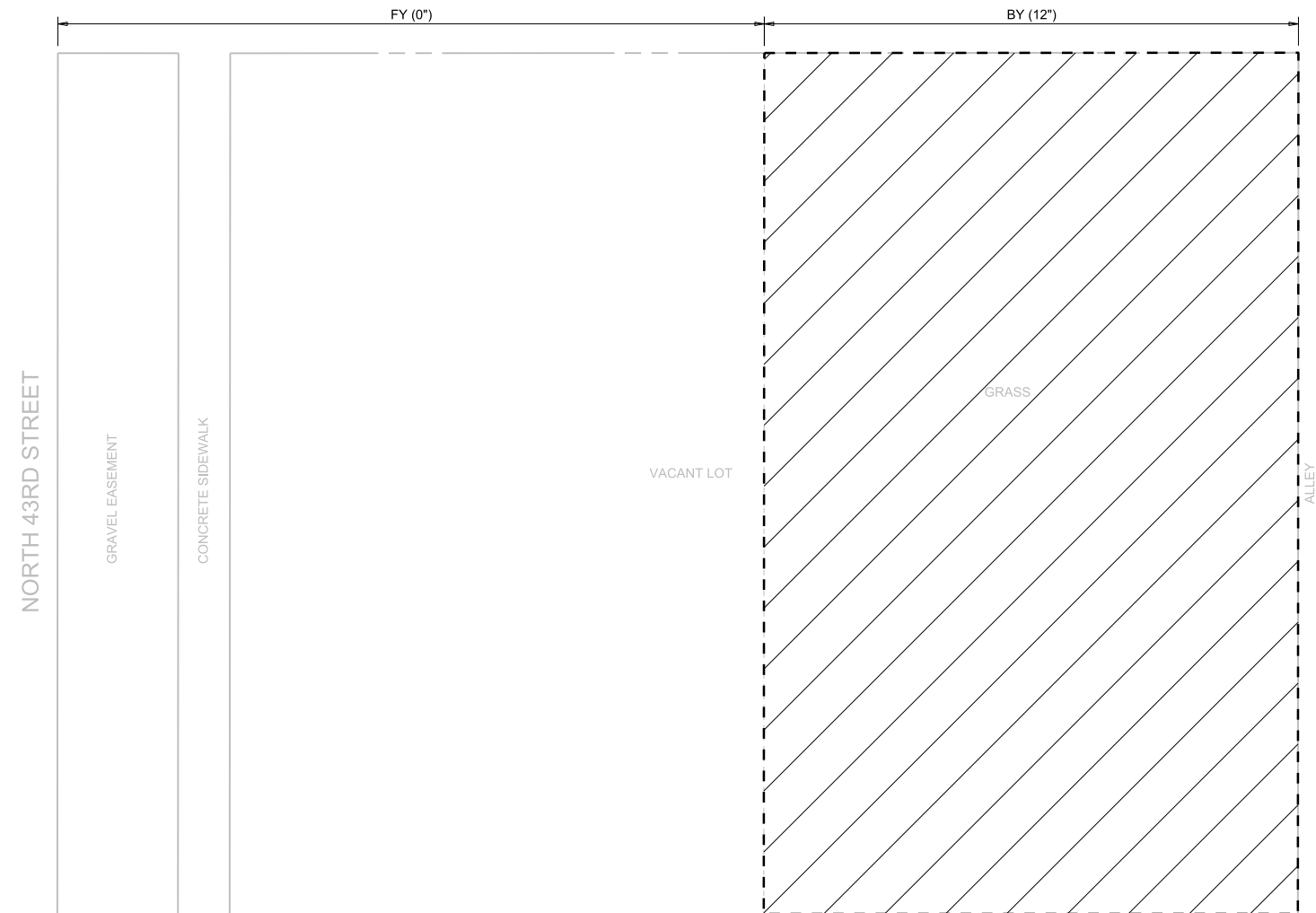
1. **PARCEL ID(S): 02-04.0-305-040.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 51 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017, HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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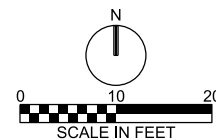
FIGURE C-017
████████ NORTH 42ND STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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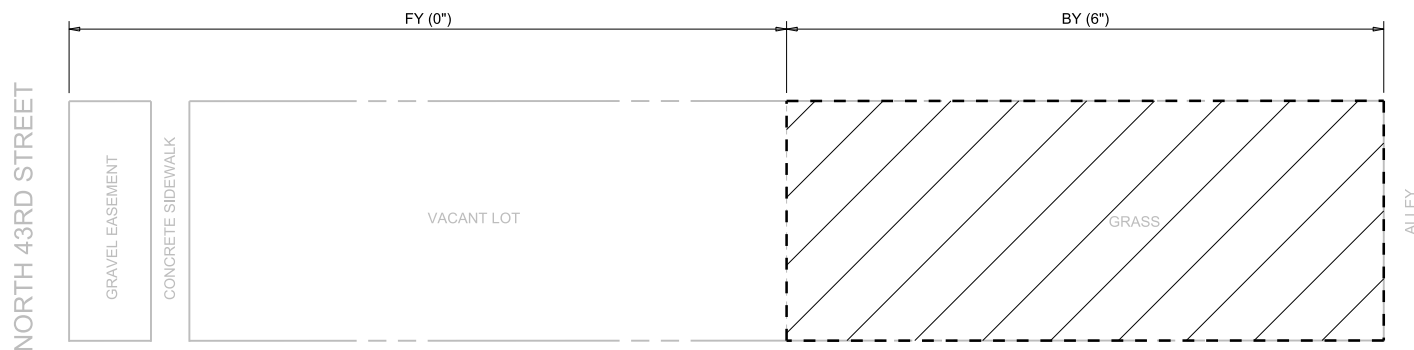
NOTES:

1. **PARCEL ID(S): 02-04.0-313-029.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 229 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



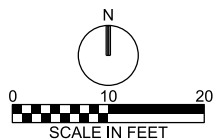
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FIGURE C-018
NORTH 43RD STREET (02-04.0-313-029)
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

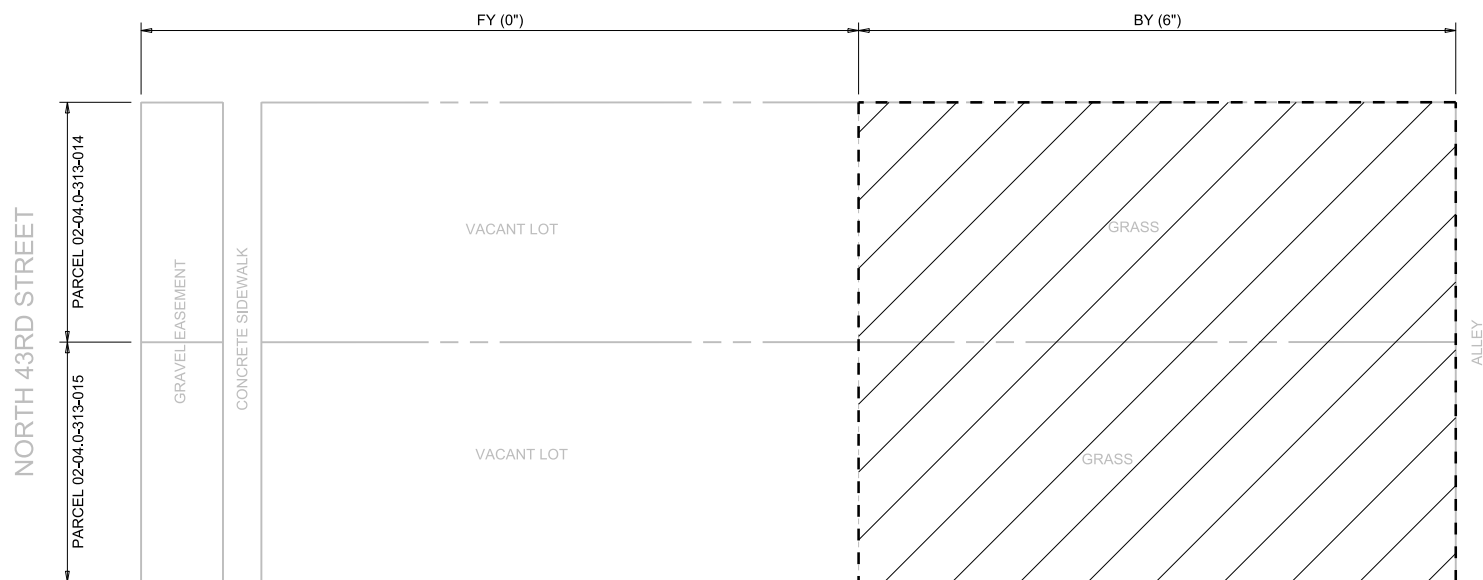
1. **PARCEL ID(S): 02-04.0-313-013.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 29 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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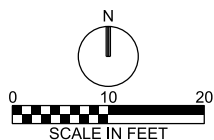
FIGURE C-019
02-04.0 NORTH 43RD STREET (02-04.0-313-013)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-04.0-313-014 AND 02-04.0-313-015.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 58 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



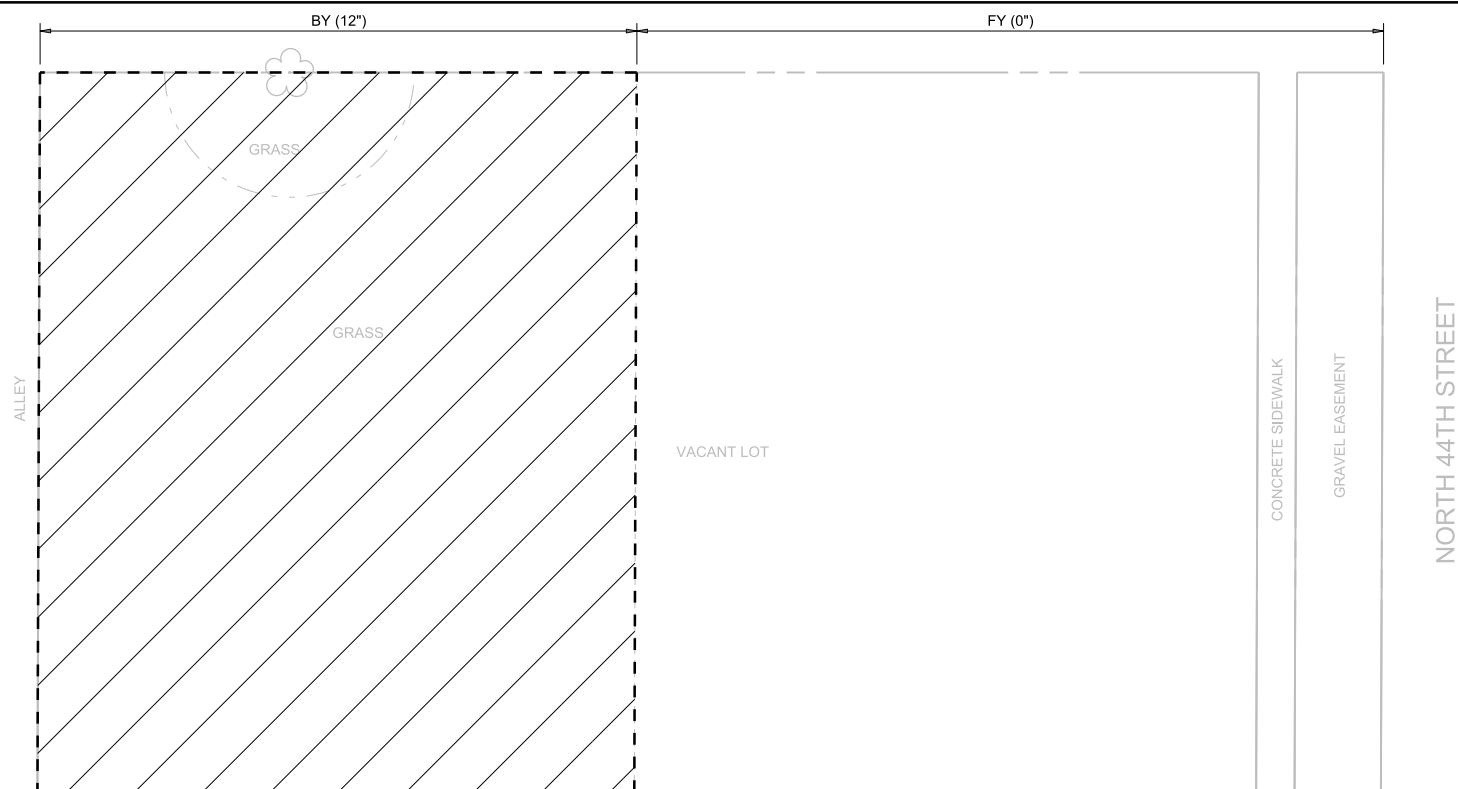
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NORTH 43RD STREET (02-04.0-313-014 AND 02-04.0-313-015)

FIGURE C-020

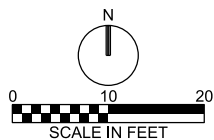
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

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NOTES:

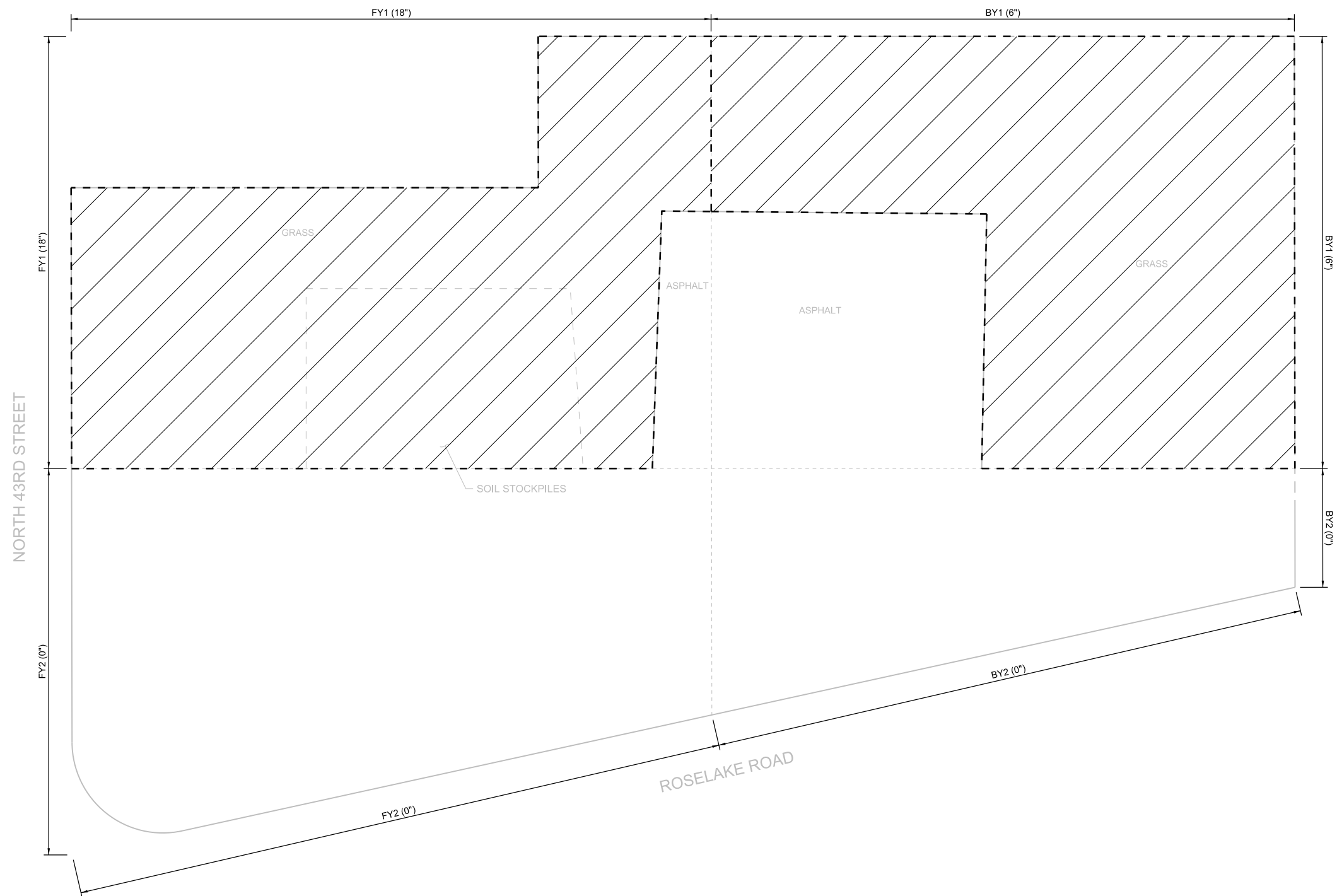
1. **PARCEL ID(S): 02-04.0-307-056.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 166 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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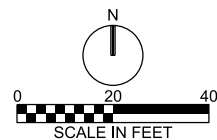
FIGURE C-021
NORTH 44TH STREET (02-04.0-307-056)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

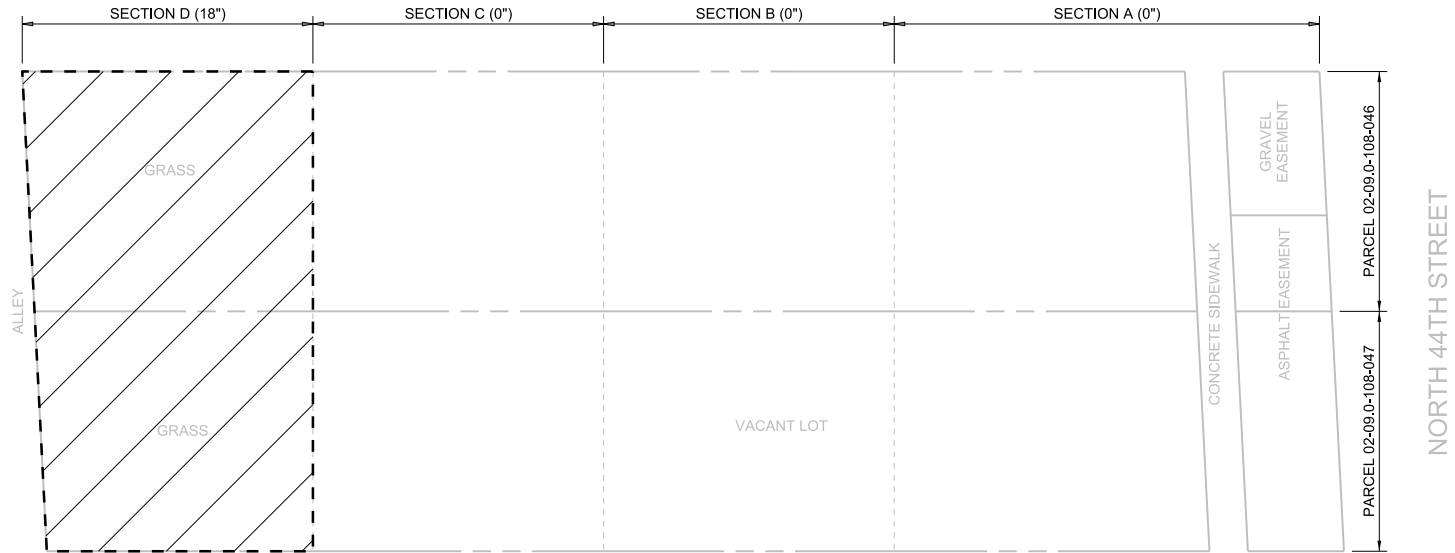


- NOTES:
1. **PARCEL ID(S): 02-09.0-108-069.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY1 AND 6 INCHES IN BY1.
 3. TOTAL EXCAVATION IS: 1528 CY
 4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
 5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

FIGURE C-022
NORTH 44TH STREET (02-09.0-108-069)
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1

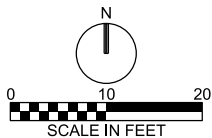


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NOTES:

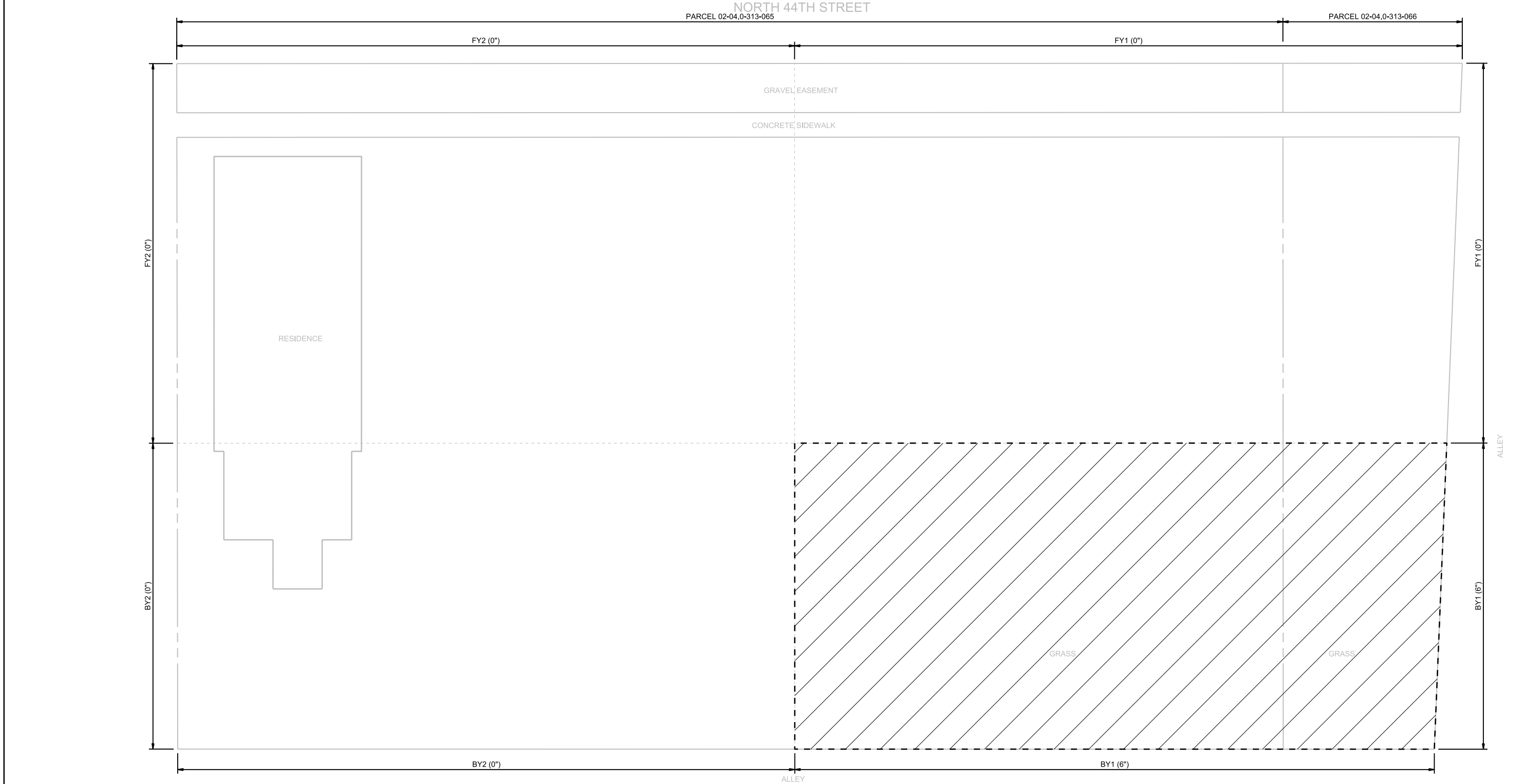
1. **PARCEL ID(S): 02-09.0-108-046 AND 02-09.0-108-047.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 81 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



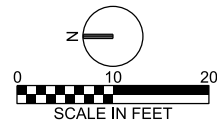
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FIGURE C-023
NORTH 44TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

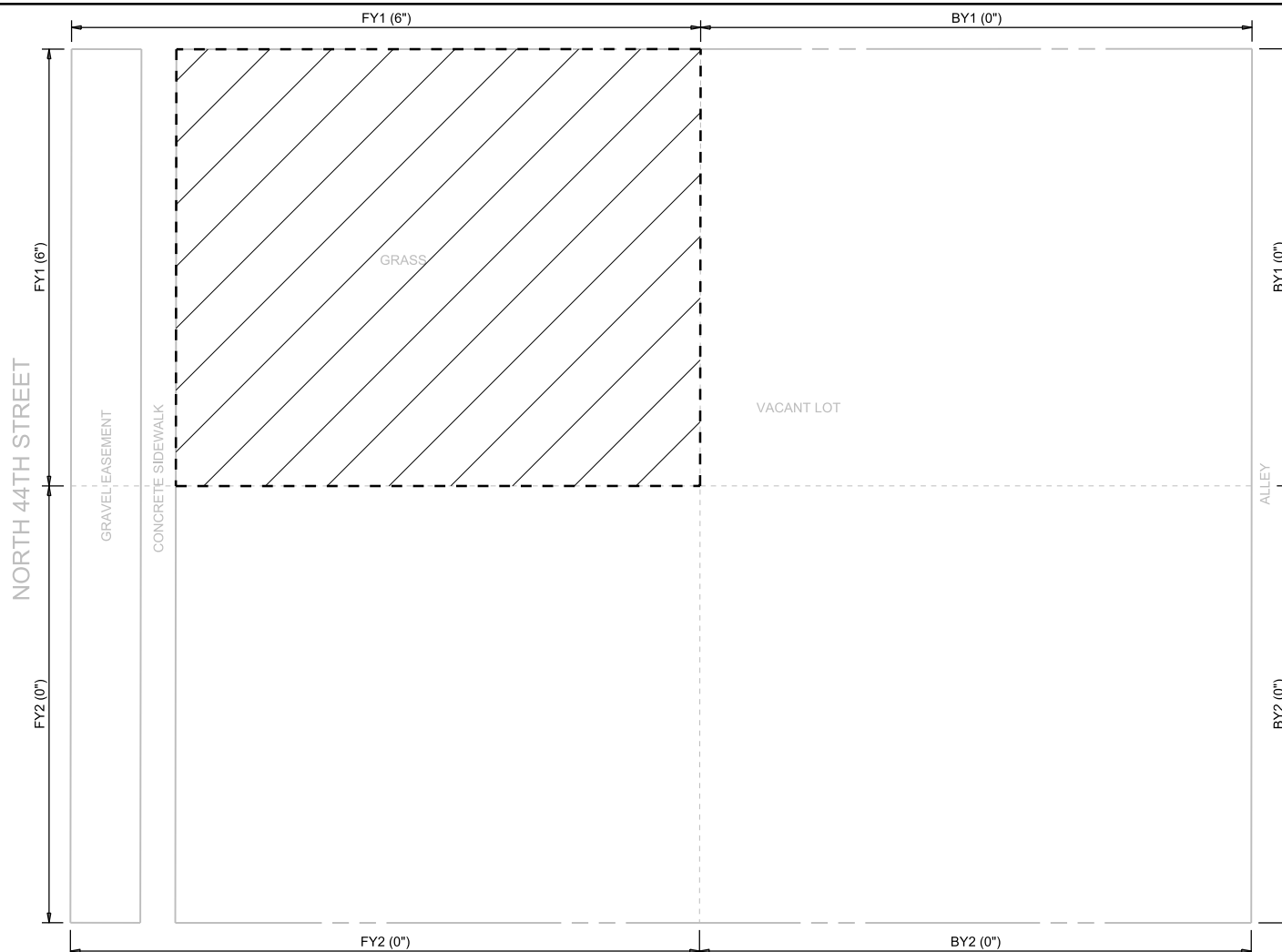


- NOTES:
1. **PARCEL ID(S): 02-04.0-313-065 AND 02-04.0-313-066.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY1.
 3. TOTAL EXCAVATION IS: 152 CY
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



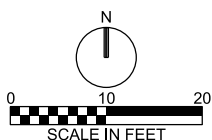
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FIGURE C-024
NORTH 44TH STREET
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

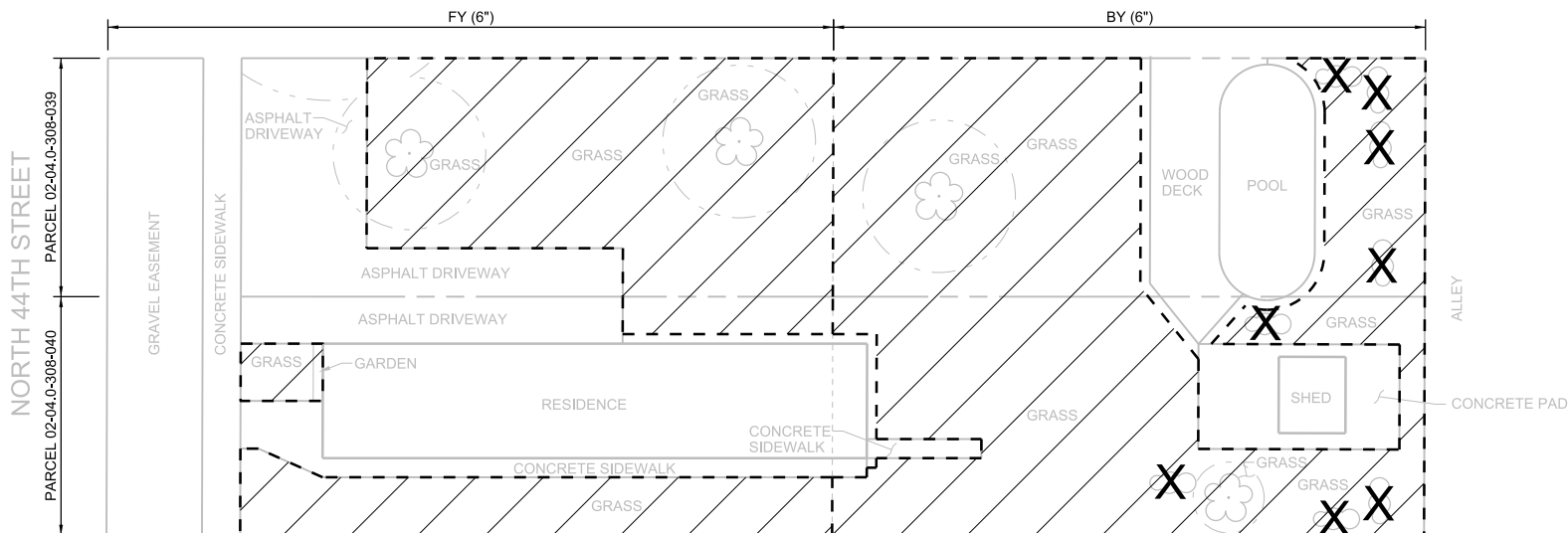
1. **PARCEL ID(S): 02-04.0-314-086.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY1.
3. TOTAL EXCAVATION IS: 55 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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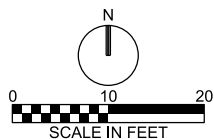
FIGURE C-025
NORTH 44TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-04.0-308-039 AND 02-04.0-308-040.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY AND 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 67 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS. IN GARDEN AREA, ONE FOOT WIDE MANUAL EXCAVATION ALONG RESIDENCE.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.

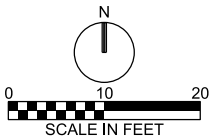


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FIGURE C-026
NORTH 44TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1

NOTES:

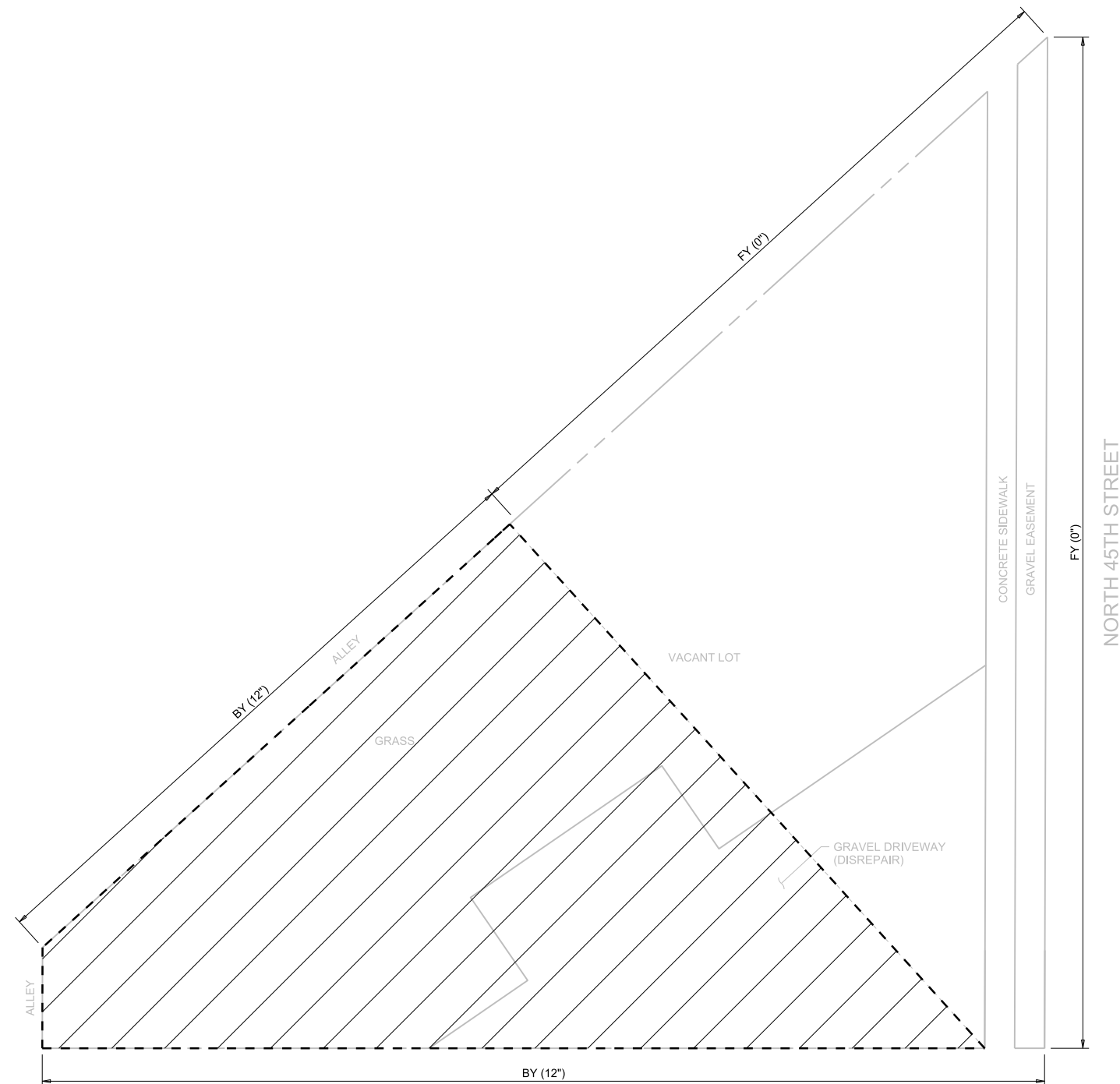
1. **PARCEL ID(S): 02-04.0-307-045 AND 02-04.0-307-046.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY AND 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 232 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002. COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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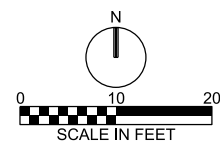
FIGURE C-027
 NORTH 44TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



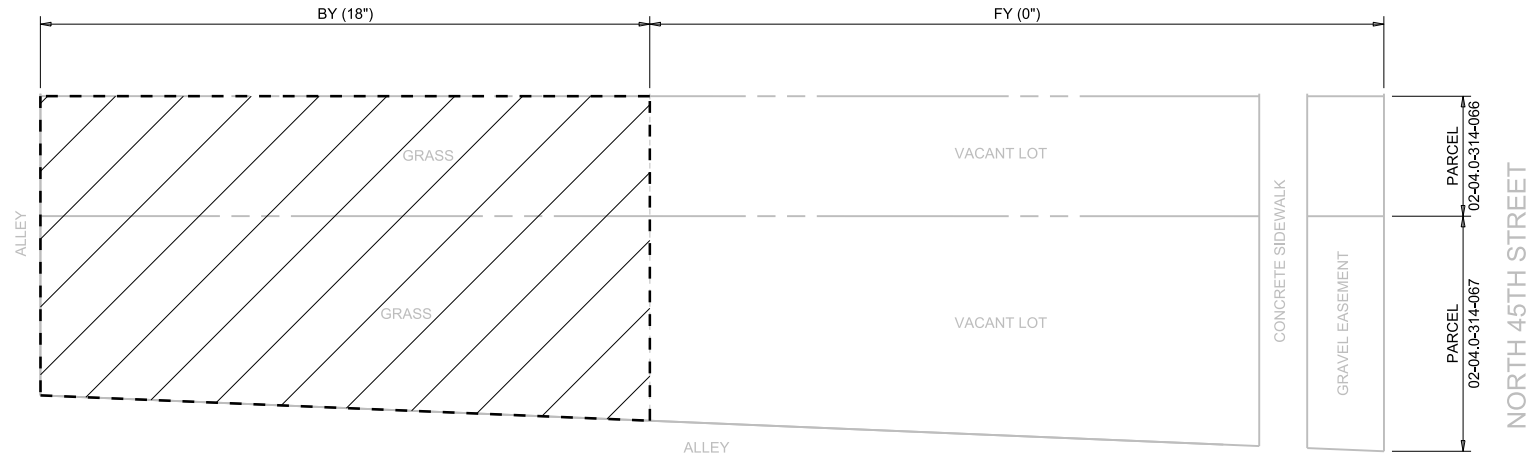
NOTES:

1. **PARCEL ID(S): 02-04.0-308-045.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 105 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



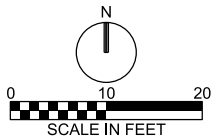
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FIGURE C-028
 NORTH 44TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

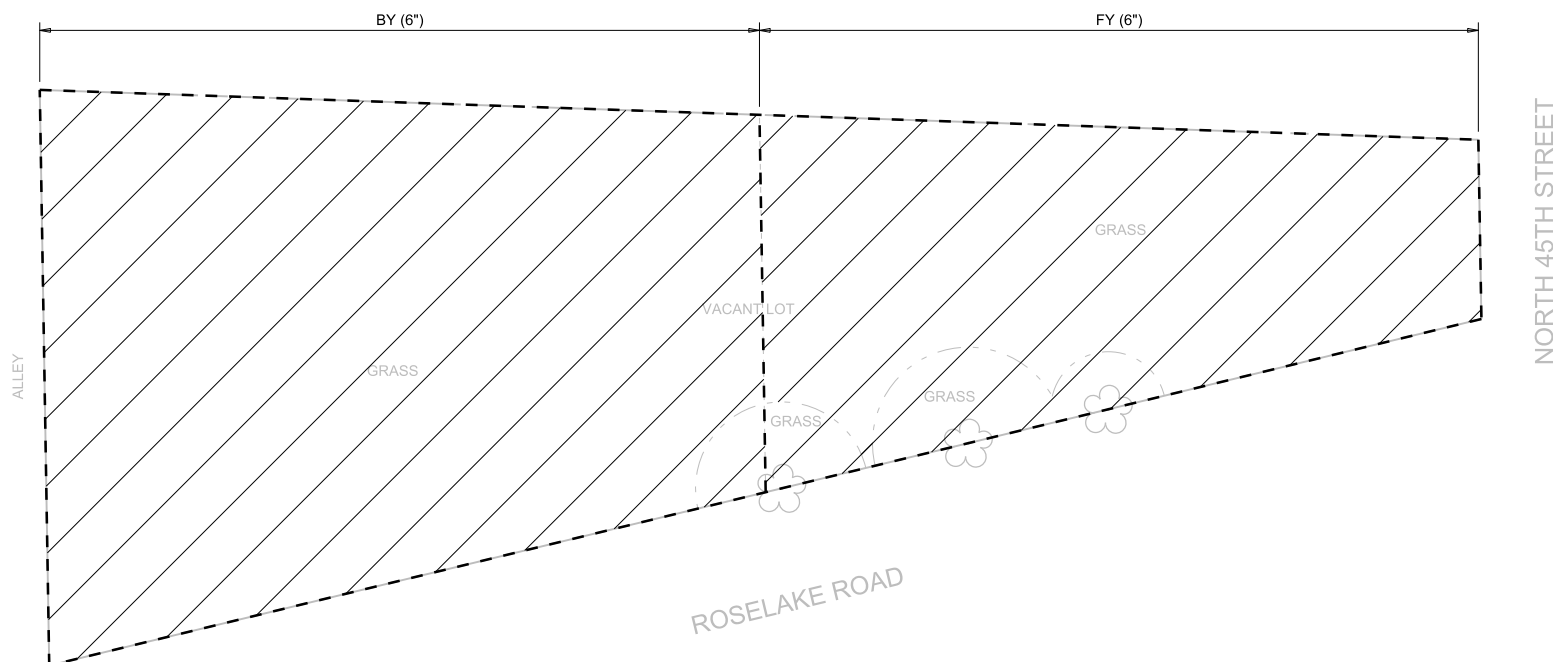
1. **PARCEL ID(S): 02-04.0-314-066 AND 02-04.0-314-067.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN BY.
3. TOTAL EXCAVATION IS: 115 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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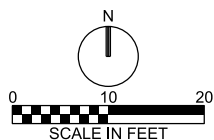
FIGURE C-029
NORTH 45TH STREET (02-04.0-314-066 AND 02-04.0-314-067)

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



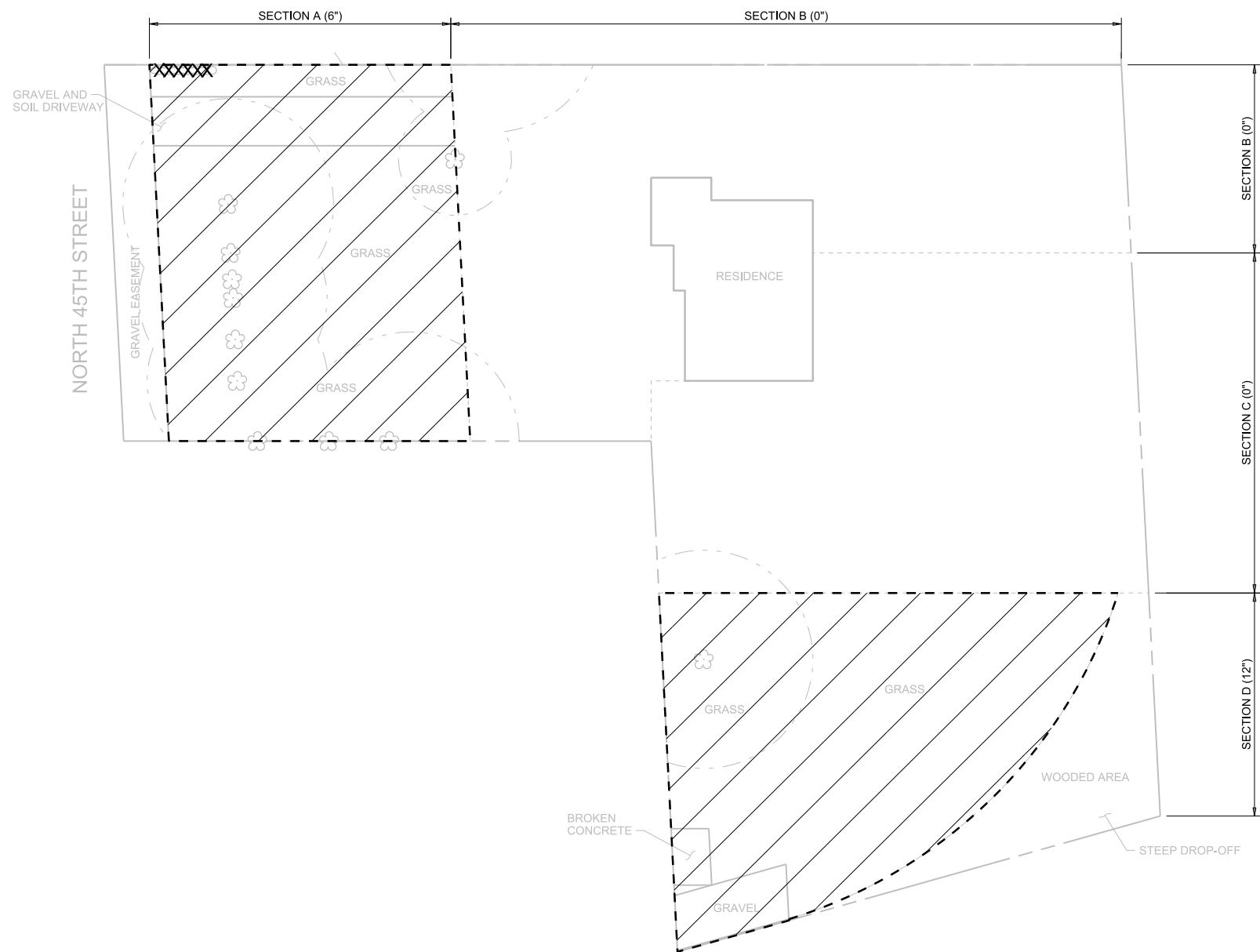
NOTES:

1. **PARCEL ID(S): 02-09.0-109-045.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY AND 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 107 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



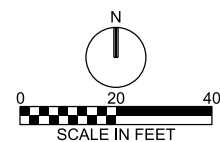
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FIGURE C-030
5500 NORTH 45TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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NOTES:

1. **PARCEL ID(S): 02-09.0-110-012.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION A AND 12 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS 371 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. WOODED AREA WAS NOT SAMPLED DURING THE PREDESIGN SAMPLING EVENT, AND IS THEREFORE NOT INCLUDED IN THE EXCAVATION EXTENTS. WOODED AREA MAY BE SAMPLED DURING REMEDIAL ACTIVITIES FOR POTENTIAL EXCAVATION AT THE EPA'S DISCRETION.

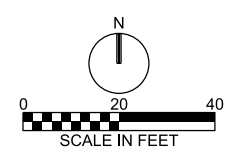


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FIGURE C-031
 NORTH 45TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



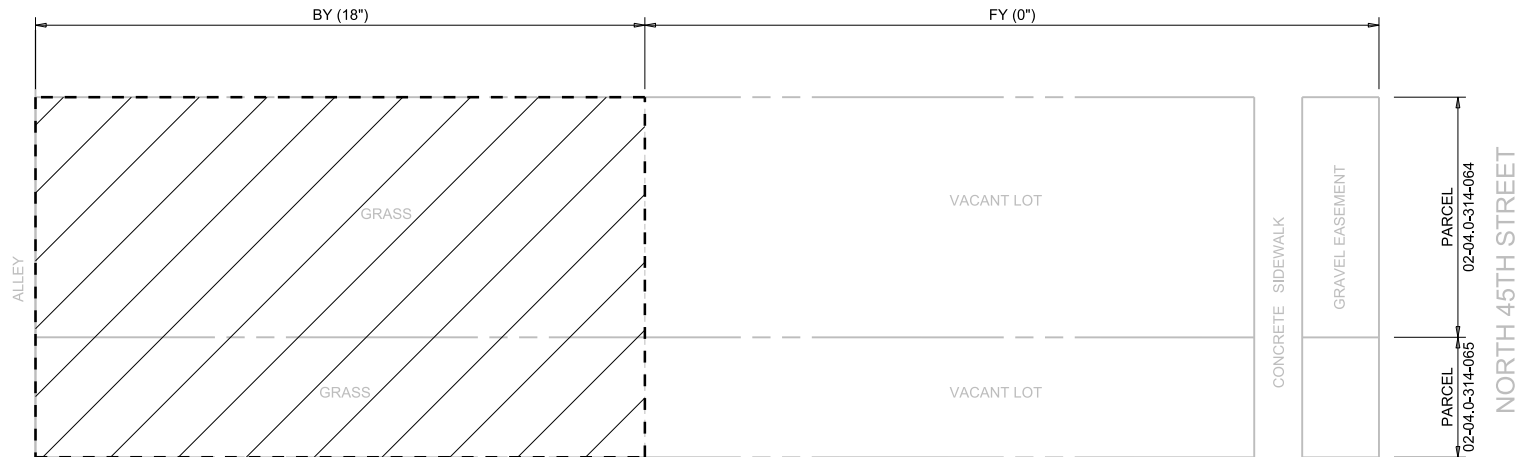
- NOTES:
1. **PARCEL ID(S): 02-09.0-110-011.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN Q1, 6 INCHES IN Q2, 6 INCHES IN Q3, AND 6 INCHES IN Q4.
 3. TOTAL EXCAVATION IS: 435 CY
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.
 7. THE AREA OF OVERGROWN VEGETATION WAS NOT SAMPLED, AND IS THEREFORE EXCLUDED FROM THE EXCAVATION EXTENTS.



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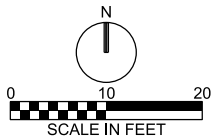
FIGURE C-032
NORTH 45TH STREET
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1





NOTES:

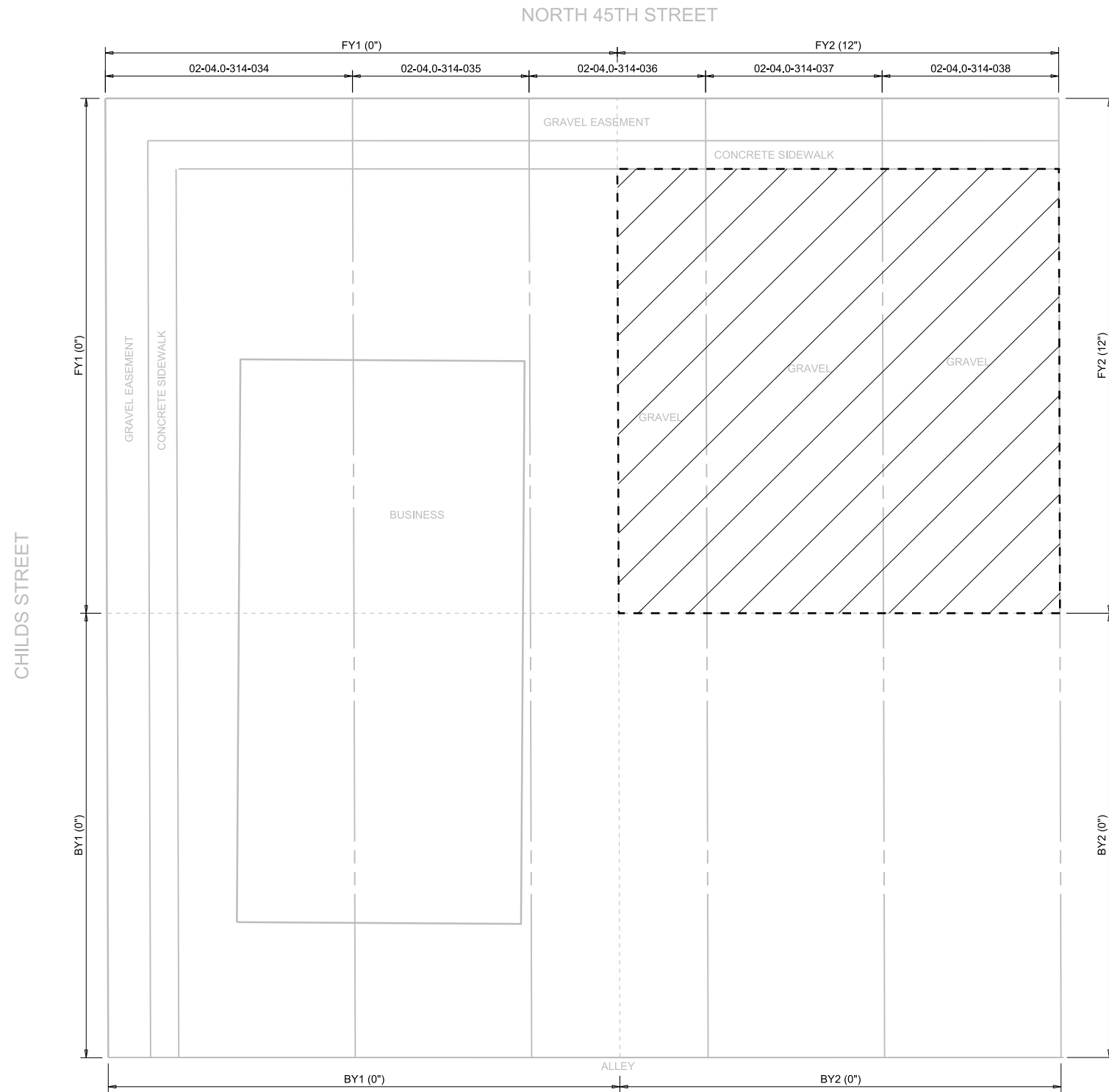
1. **PARCEL ID(S): 02-04.0-314-064 AND 02-04.0-314-065.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN BY.
3. TOTAL EXCAVATION IS: 132 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF SCREENING RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



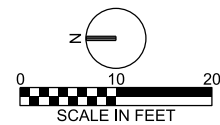
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FIGURE C-033
OLD AMERICAN ZINC SUPERFUND SITE
NORTH 45TH STREET

OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1

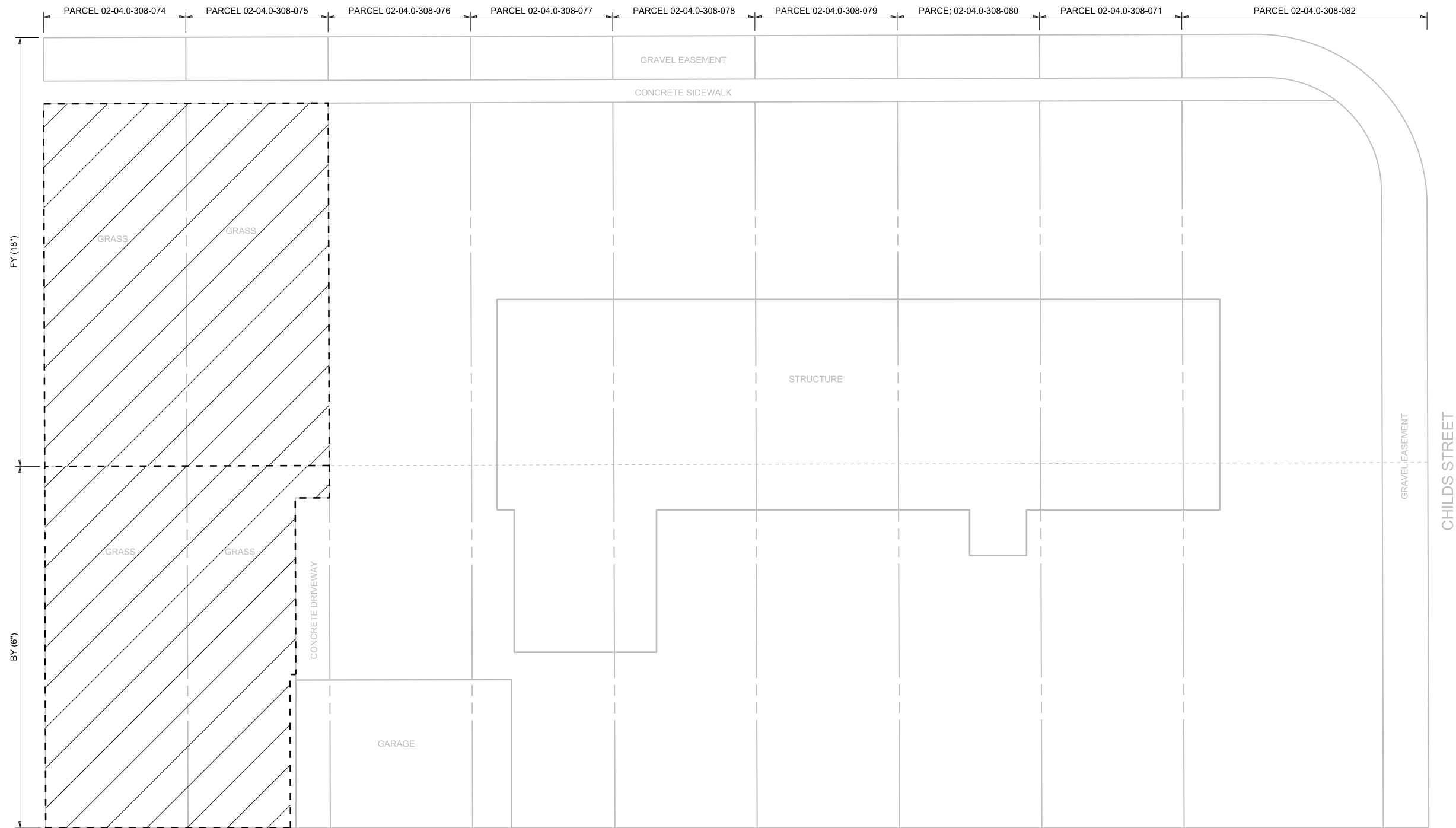


- NOTES:
1. **PARCEL ID(S): 02-04.0-314-034, 02-04.0-314-035, 02-04.0-314-036, 02-04.0-314-037, AND 02-04.0-314-038.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN FY 2.
 3. TOTAL EXCAVATION IS: 141 CY
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

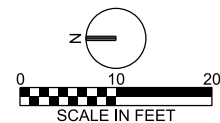


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FIGURE C-034
NORTH 45TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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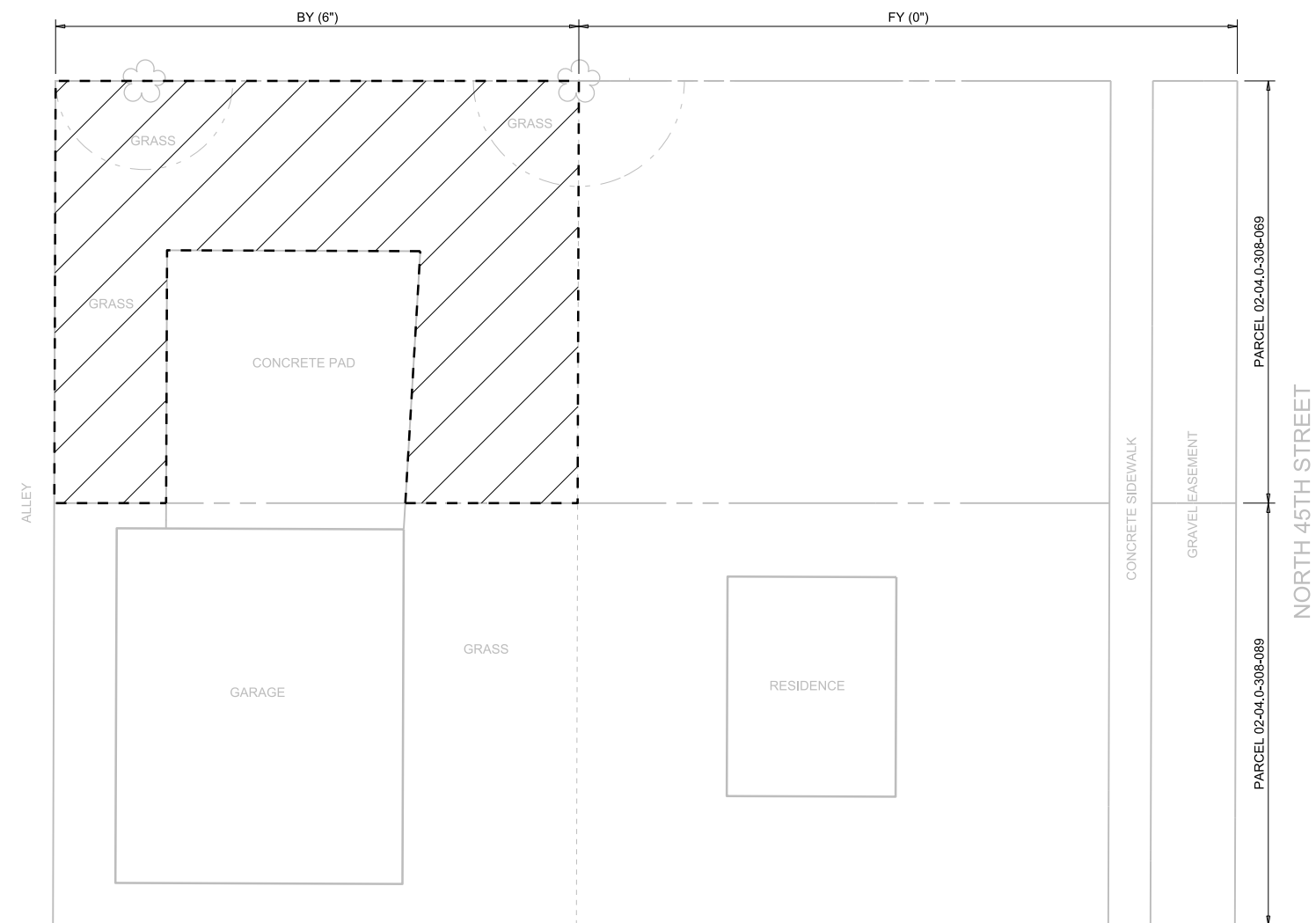


- NOTES:
1. **PARCEL ID(S): 02-04.0-308-074, 02-04.0-308-075, 02-04.0-308-076, 02-04.0-308-077, 02-04.0-308-078, 02-04.0-308-079, 02-04.0-308-080, 02-04.0-308-081, AND 02-04.0-308-082. ONLY PARCEL IDS 02-04.0-308-074 AND 02-04.0-308-075 WILL BE EXCAVATED FOR THIS ADDRESS AS SHOWN ON THIS DRAWING.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY AND 6 INCHES IN BY.
 3. TOTAL EXCAVATION IS: 229 CY
 4. PERFORM XRF SCREENING AT BOTTOM OF THE 18 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
 5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



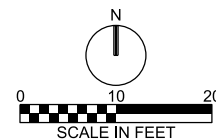
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FIGURE C-035
NORTH 45TH STREET
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

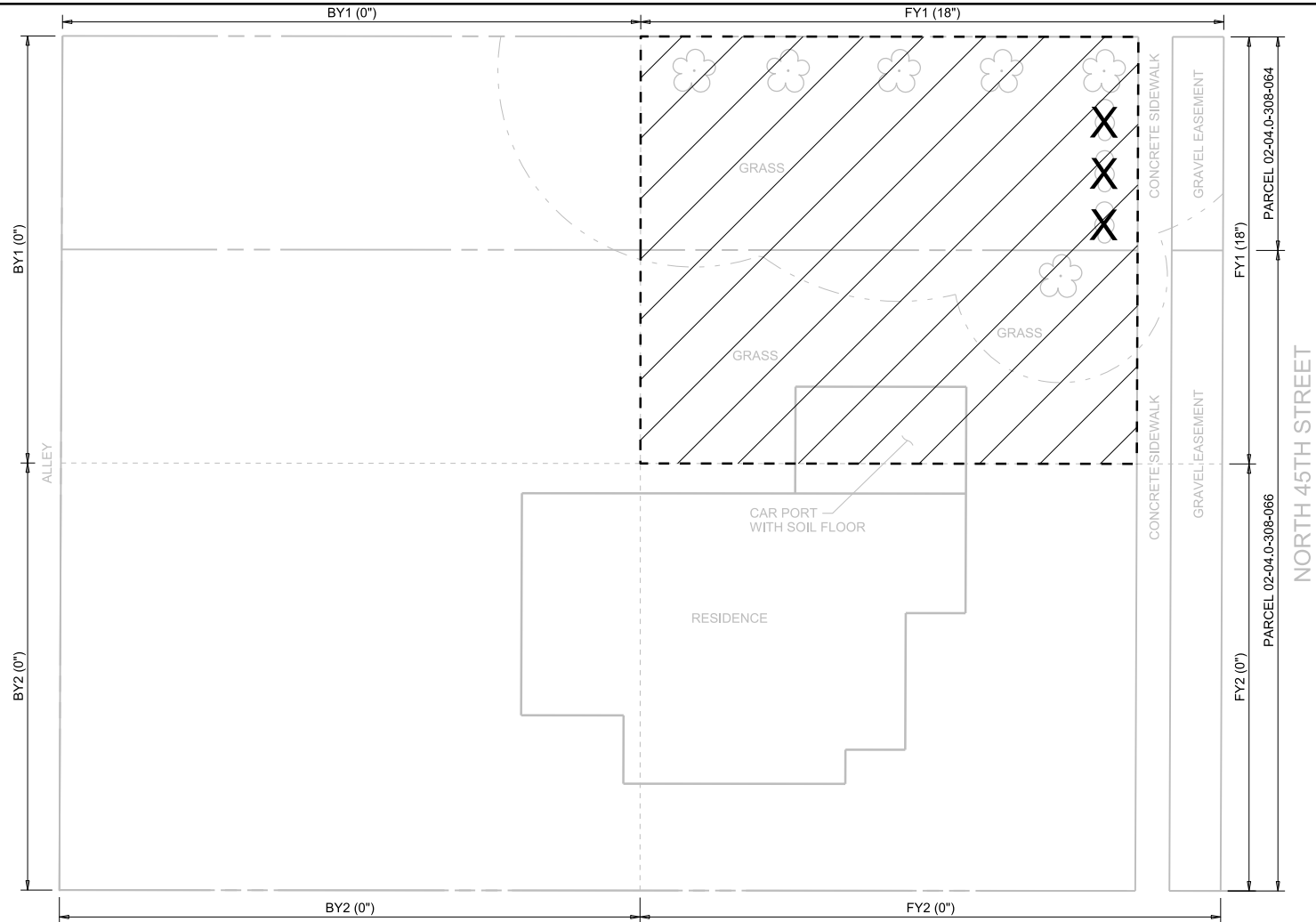
1. **PARCEL ID(S): 02-04.0-308-069 AND 02-04.0-308-089.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 41 CY
4. PARCEL ID 02-04.0-308-089 WAS NOT SAMPLED. ONLY PARCEL ID 02-04.0-308-069 WILL BE EXCAVATED FOR THIS ADDRESS AS SHOWN ON THIS DRAWING.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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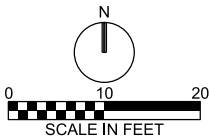
FIGURE C-036
 NORTH 45TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1

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NOTES:

1. **PARCEL ID(S): 02-04.0-308-064 AND 02-04.0-308-066.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY1.
3. TOTAL EXCAVATION IS: 78 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

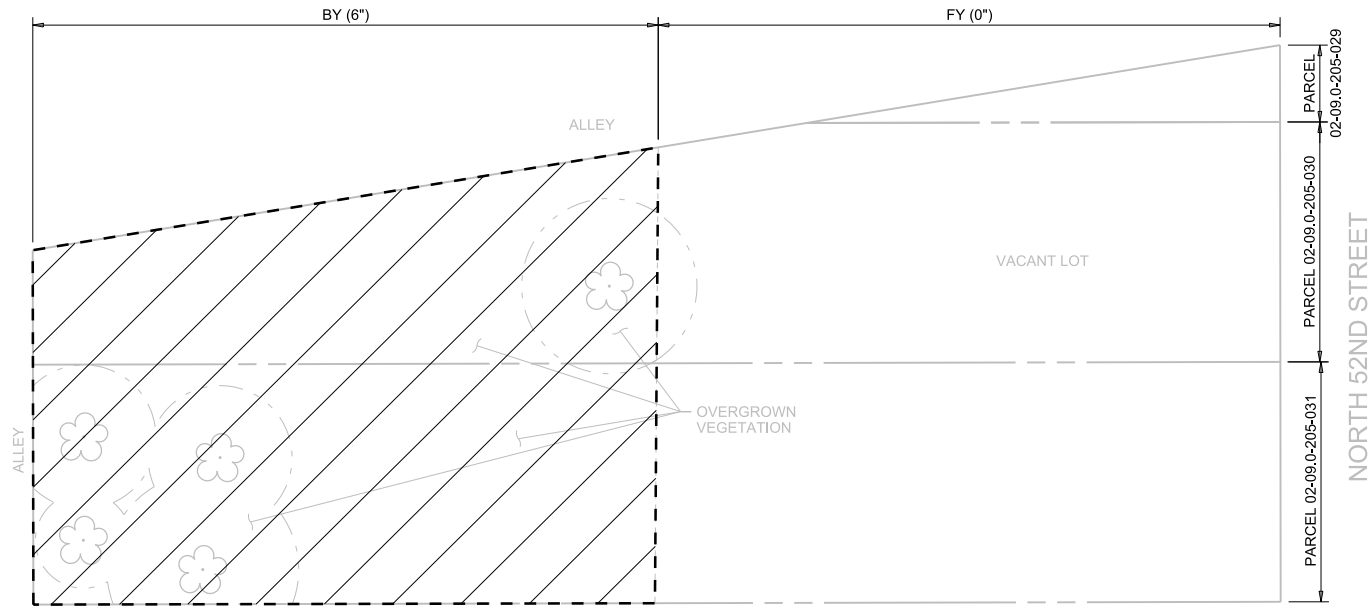


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NORTH 45TH STREET AND NORTH 45TH STREET (02-04.0-308-064)

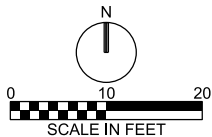
FIGURE C-037

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-09.0-205-029, 02-09.0-205-030, AND 02-09.0-205-031.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 46 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017, HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.

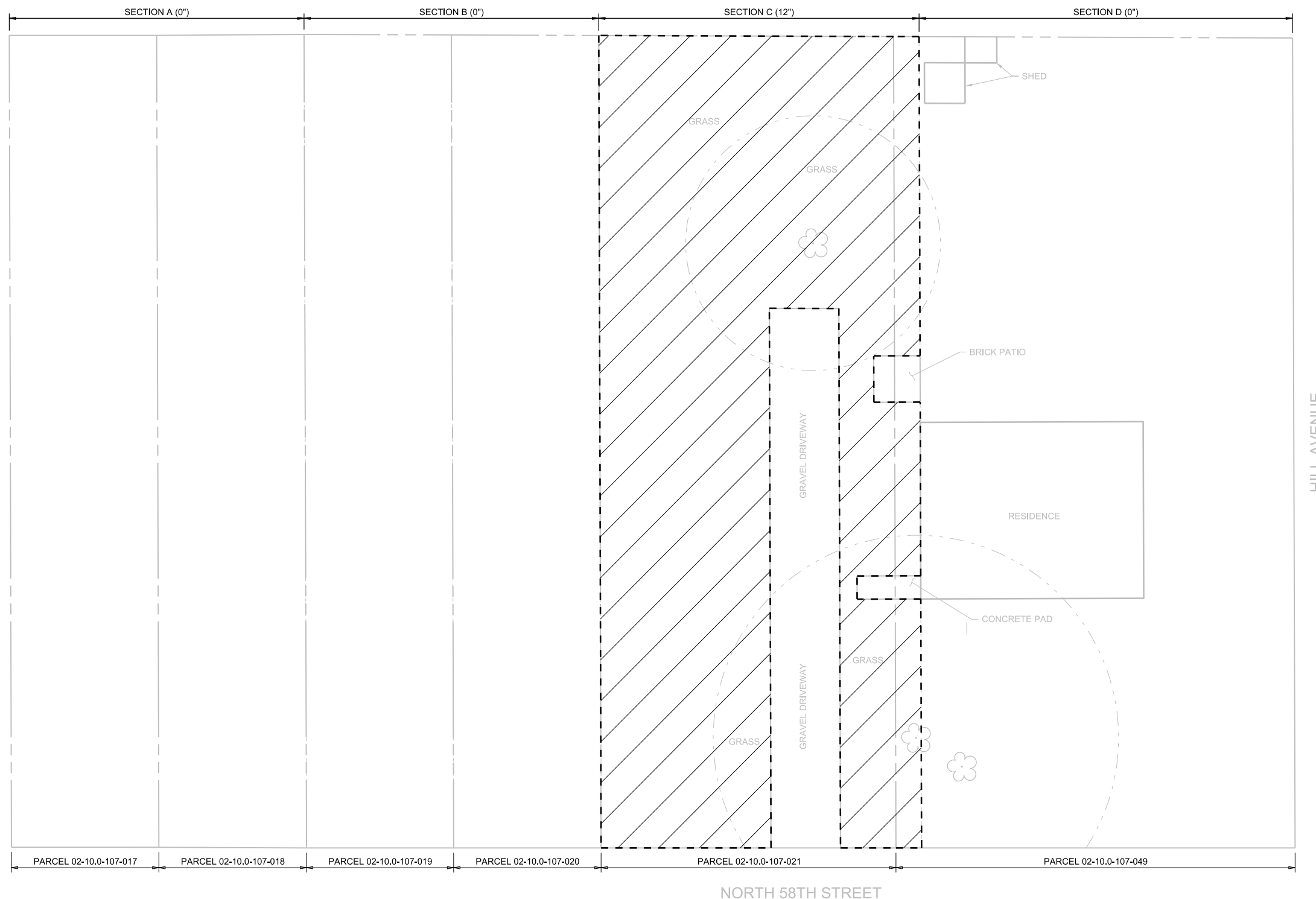


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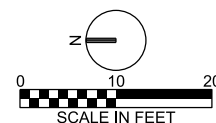
NORTH 52ND STREET AND NORTH 52ND STREET (02-09.0-205-031)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

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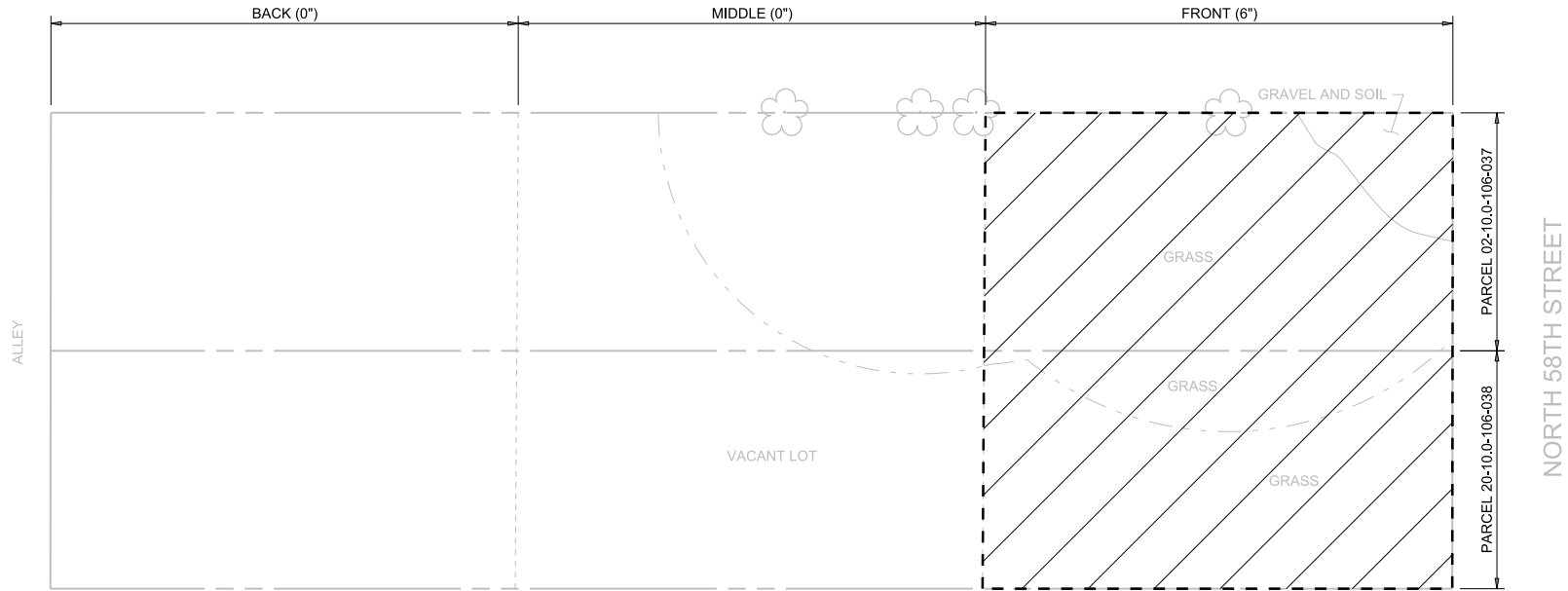


- NOTES:
1. **PARCEL ID(S): 02-10.0-107-017, 02-10.0-107-018, 02-10.0-107-019, 02-10.0-107-020, 02-10.0-107-021, AND 02-10.0-107-049.**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION C.
 3. TOTAL EXCAVATION IS: 181 CY
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



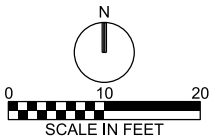
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FIGURE C-040
NORTH 58TH STREET AND NORTH 58TH STREET
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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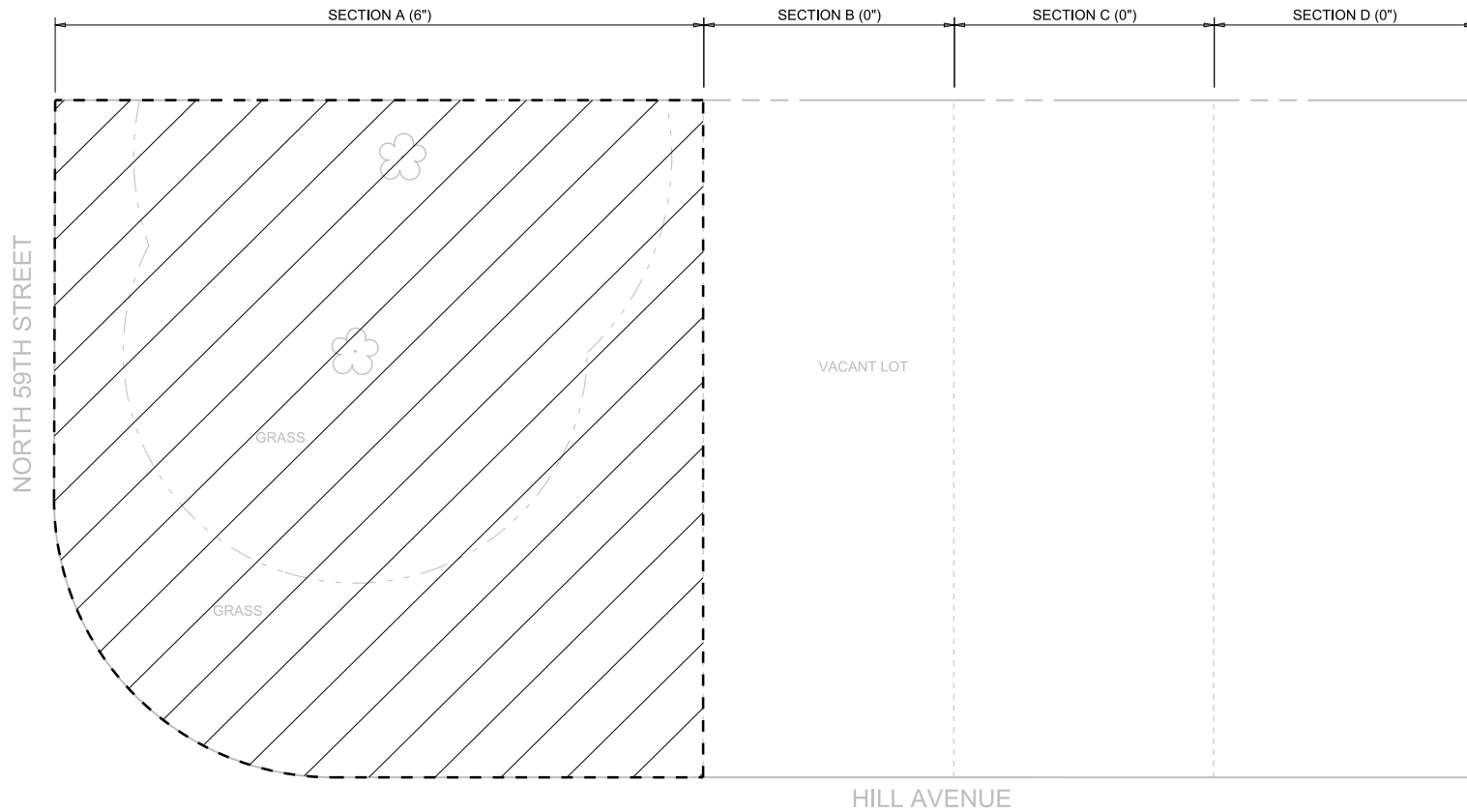
NOTES:

1. **PARCEL ID(S): 02-10.0-106-037 AND 02-10.0-106-038.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN THE FRONT.
3. TOTAL EXCAVATION IS: 37 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



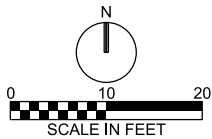
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FIGURE C-041
██████ NORTH 58TH STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

1. **PARCEL ID(S): 02-10.0-108-051.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION A.
3. TOTAL EXCAVATION IS: 75 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

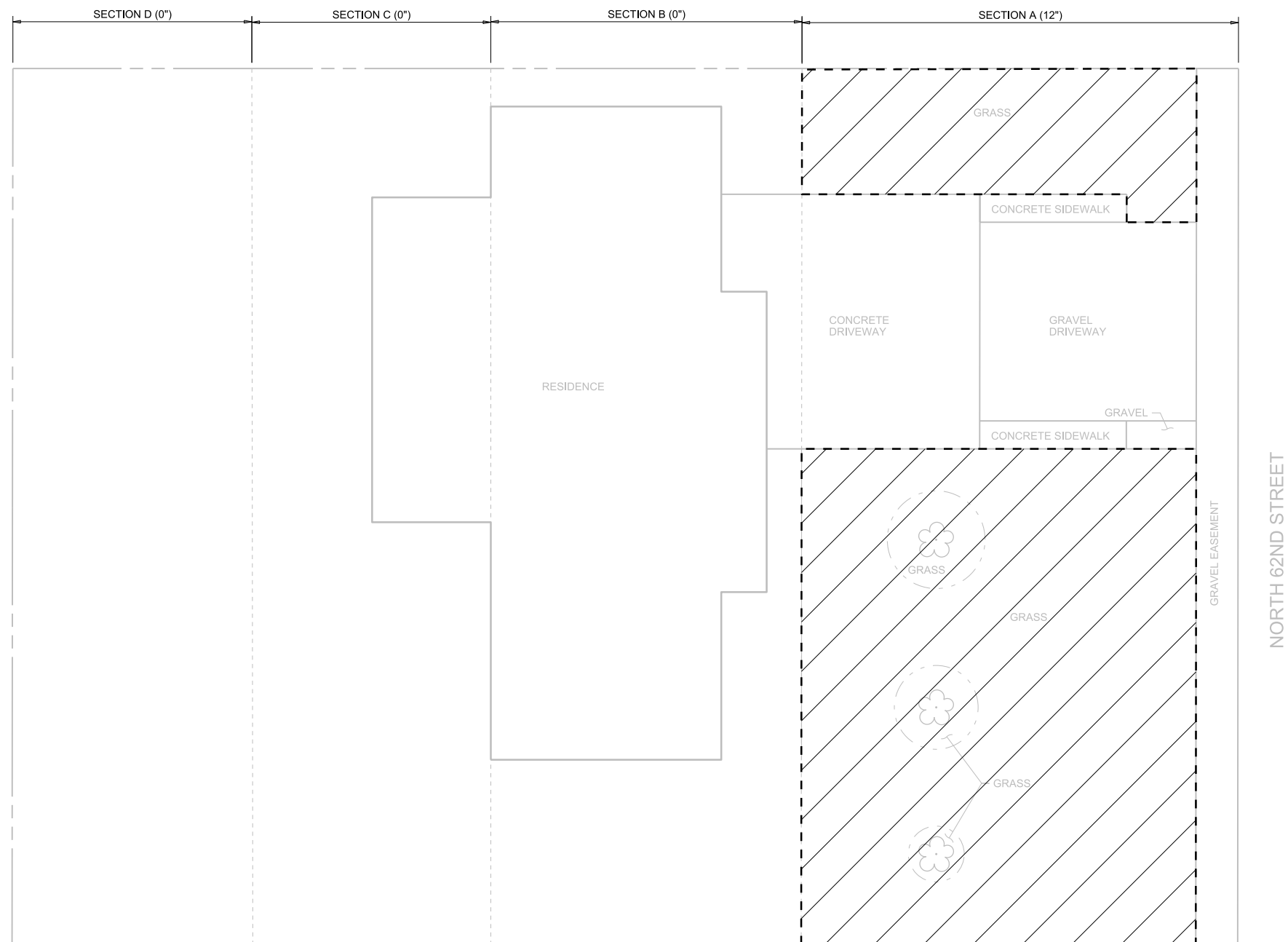


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FIGURE C-042
NORTH 59TH STREET

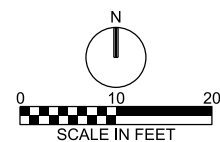
OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1

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NOTES:

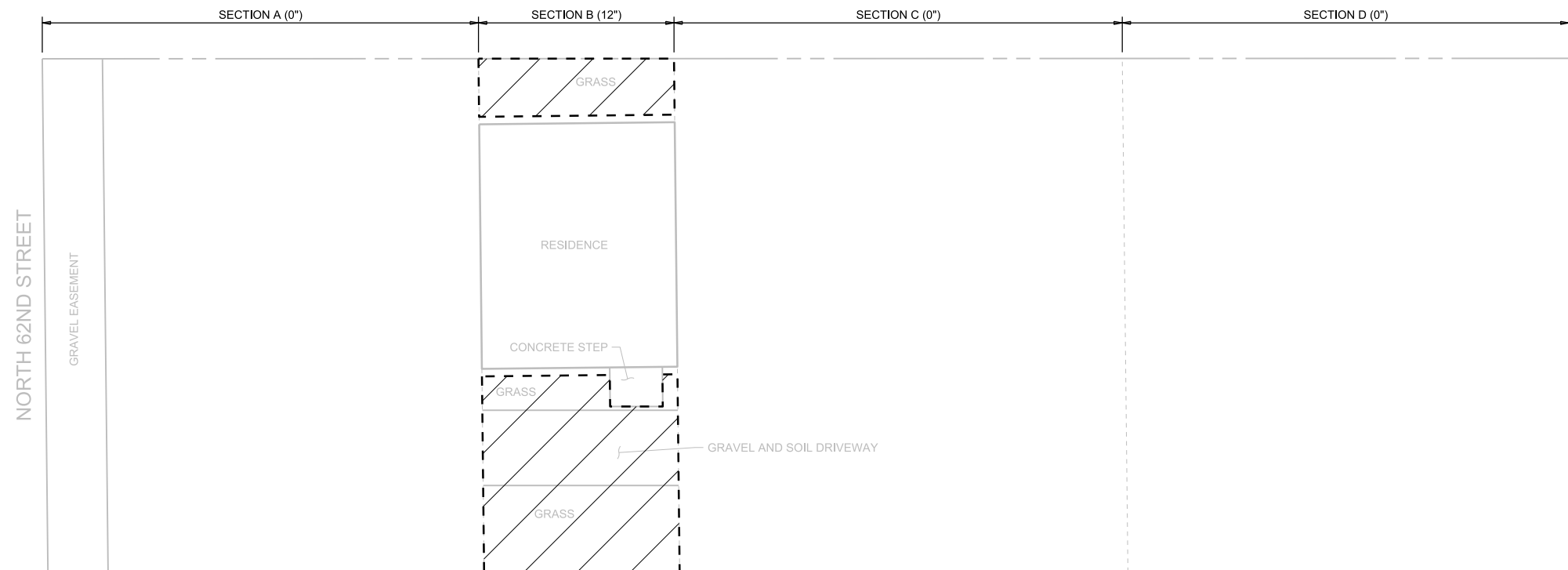
1. **PARCEL ID(S): 02-03.0-104-024.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION A.
3. TOTAL EXCAVATION IS: 187 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES (E.G. FENCING) MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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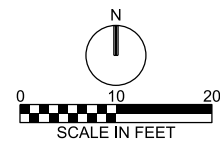
FIGURE C-043
 NORTH 62ND STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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NOTES:

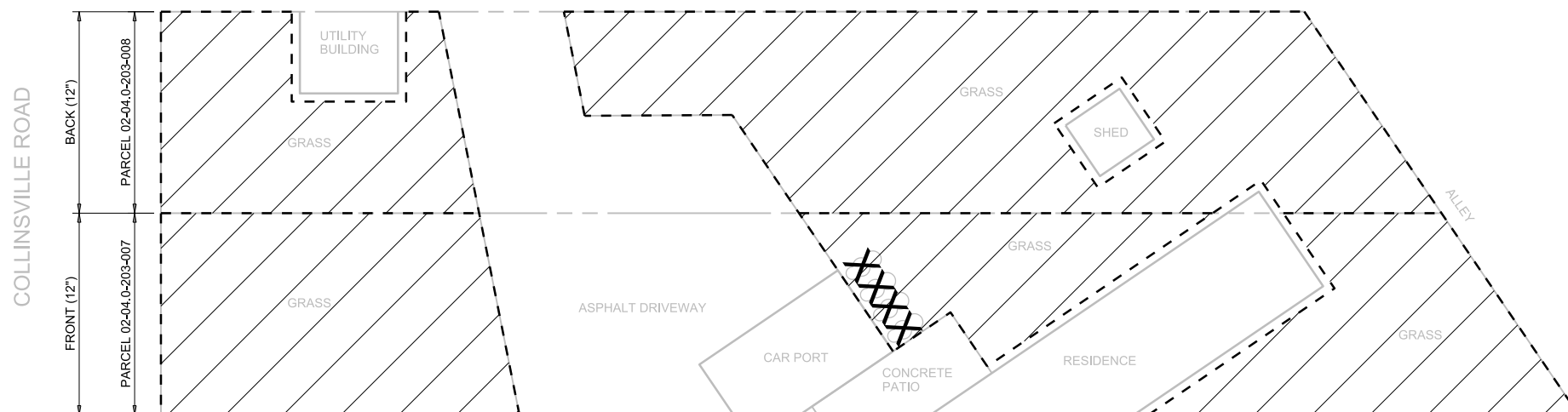
1. **PARCEL ID(S): 02-03.0-201-006.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION B.
3. TOTAL EXCAVATION IS: 28 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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FIGURE C-044
 NORTH 62ND STREET
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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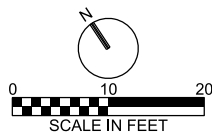


NOTES:

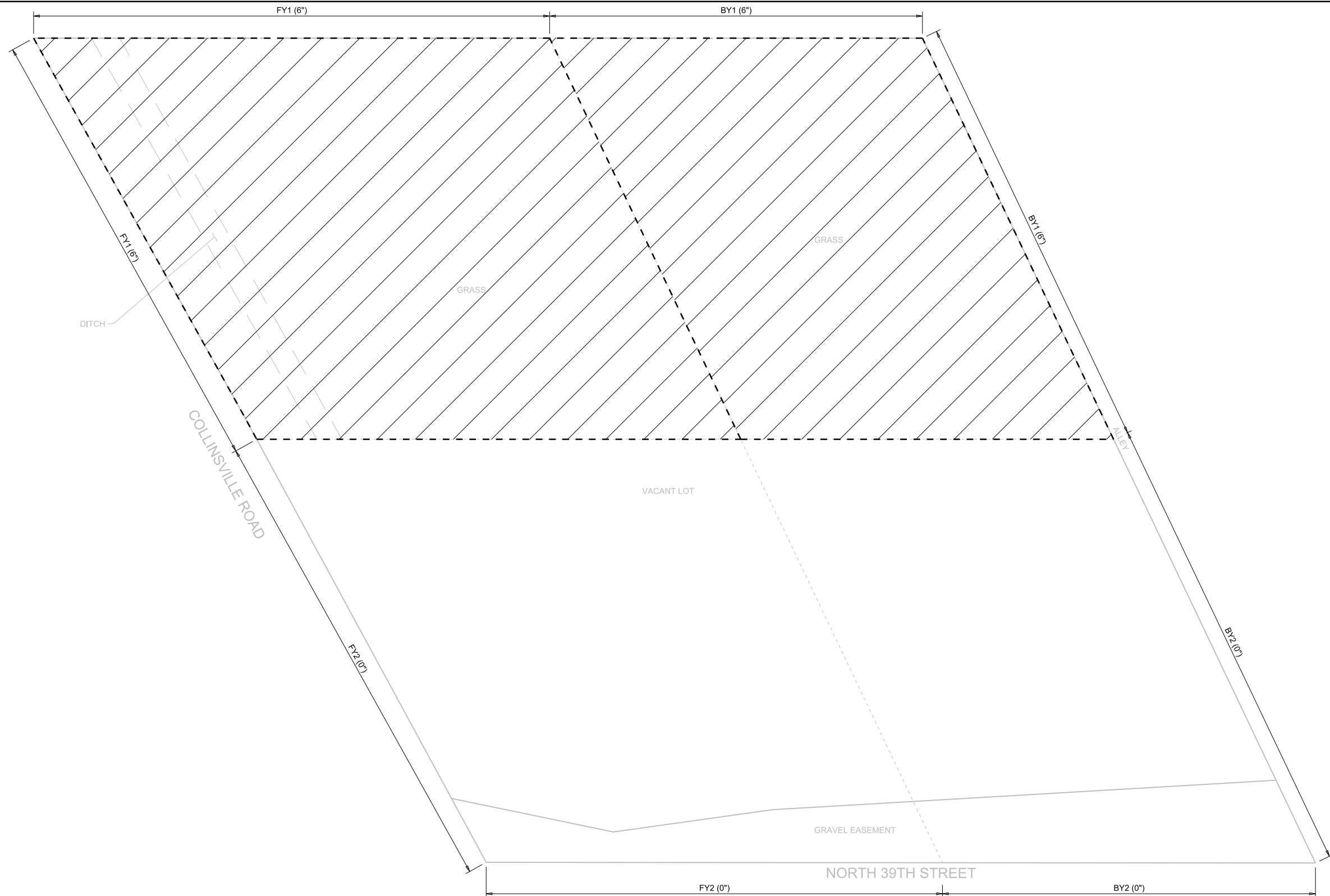
1. **PARCEL ID(S): 02-04.0-203-007 AND 02-04.0-203-008.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN THE FRONT AND 12 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 182 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

FIGURE C-045
COLLINSVILLE ROAD (02-04.0-203-007 AND 02-04.0-203-008)

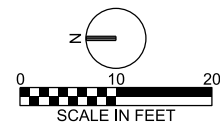
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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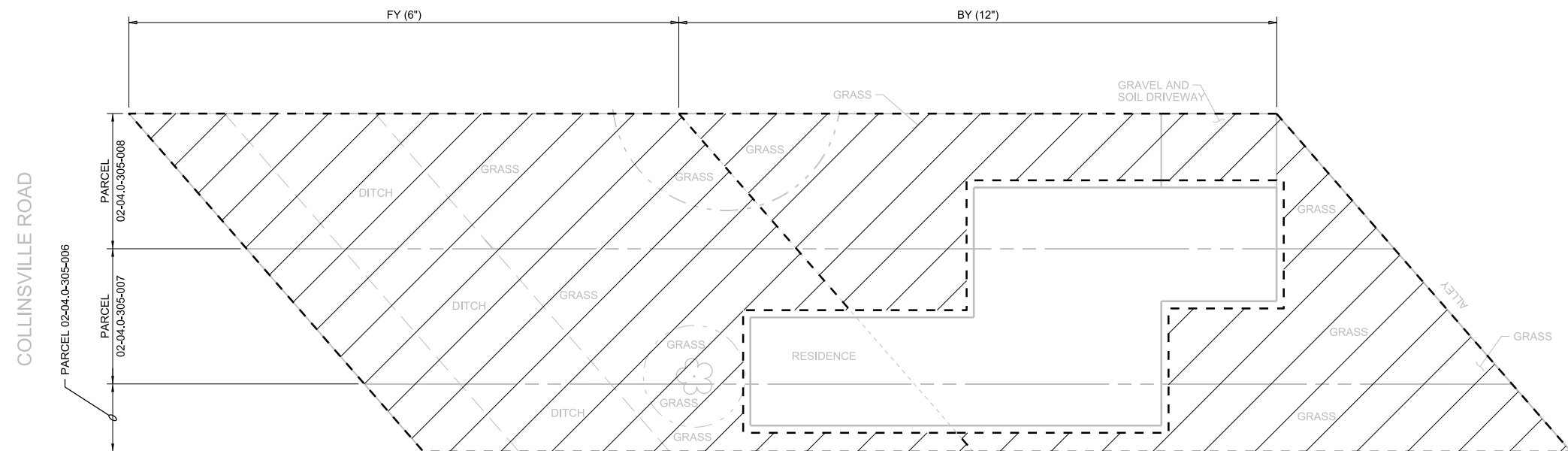
- NOTES:
1. **PARCEL ID(S): 02-04.0-303-061 AND 02-04.0-303-062**
 2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY1 AND 6 INCHES IN BY1.
 3. TOTAL EXCAVATION IS: 223 CY
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
 6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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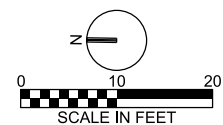
FIGURE C-046
COLLINSVILLE ROAD
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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ch2m



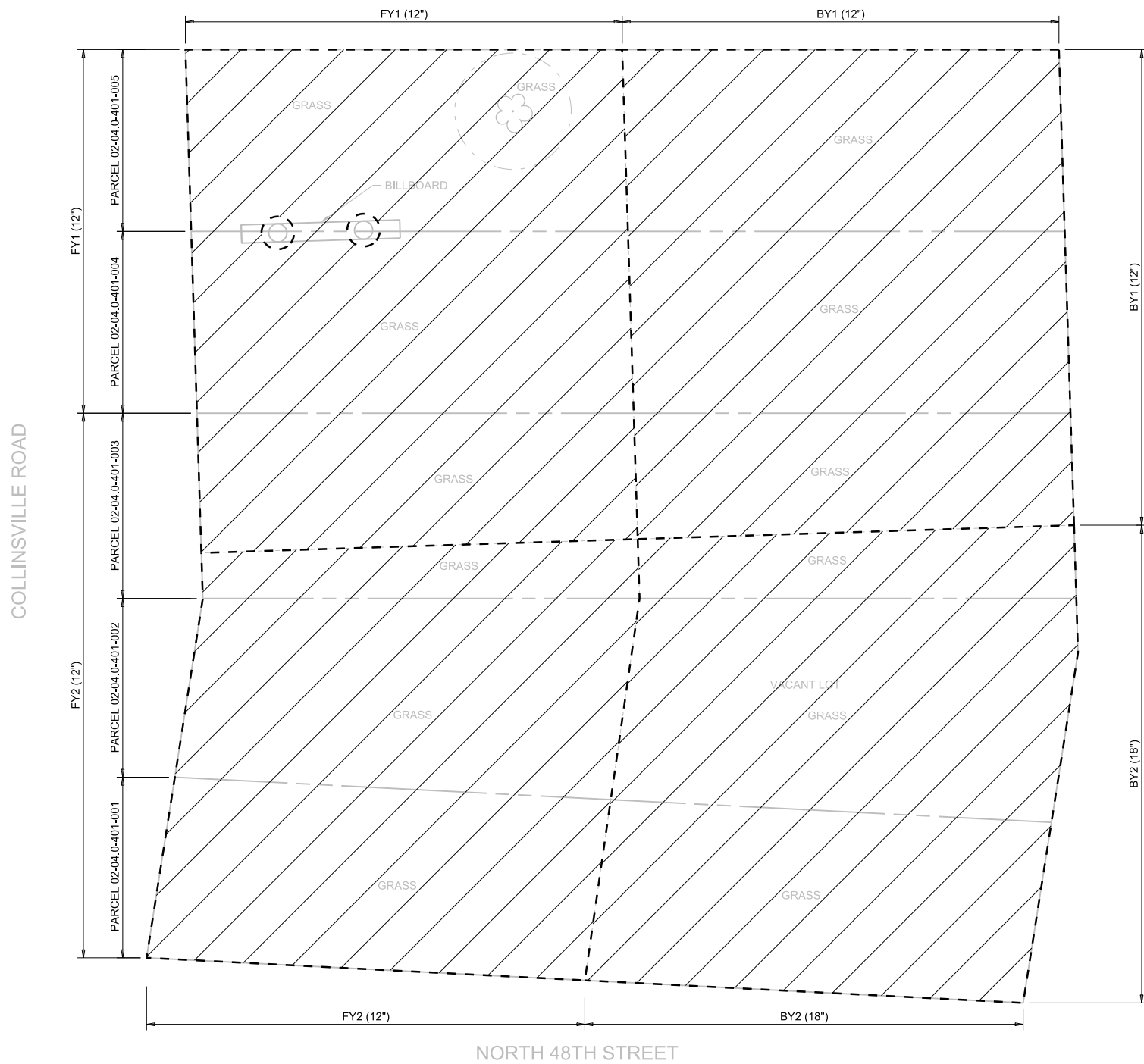
NOTES:

1. **PARCEL ID(S): 02-04.0-305-006, 02-04.0-305-007, AND 02-04.0-305-008.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY AND 12 INCHES IN BY.
3. TOTAL EXCAVATION IS 141 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017, HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



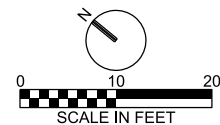
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FIGURE C-047
COLLINSVILLE ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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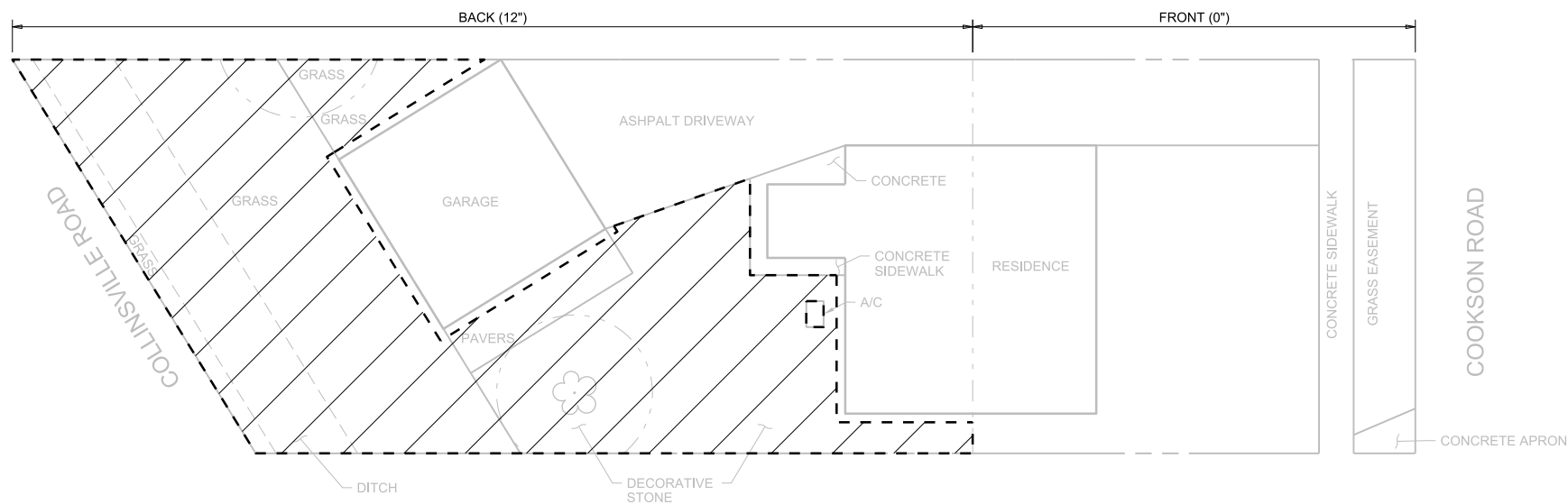
NOTES:

1. **PARCEL ID(S): 02-04.0-401-001, 02-04.0-401-002, 02-04.0-401-003, 02-04.0-401-004, AND 02-04.0-401-005.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN FY1, 12 INCHES IN FY2, 12 INCHES IN BY1, AND 18 INCHES IN BY2.
3. TOTAL EXCAVATION IS: 623 CY
4. PERFORM XRF SCREENING AT BOTTOM OF THE 18 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017. HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



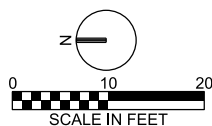
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FIGURE C-048
COLLINSVILLE ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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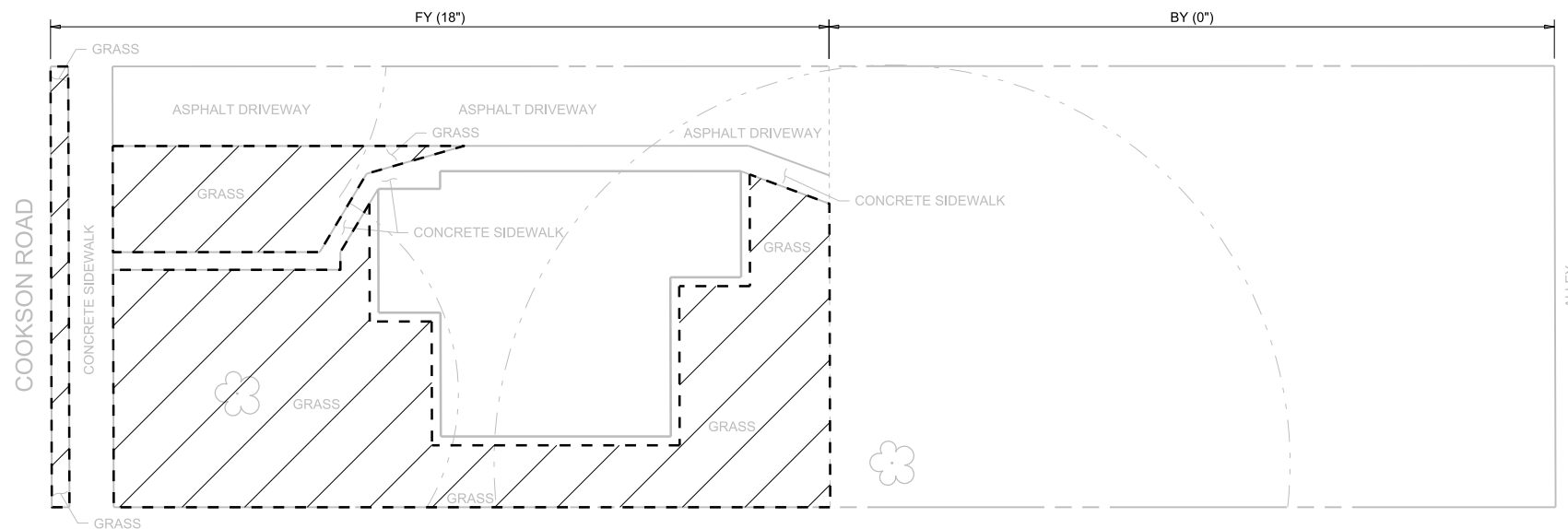
NOTES:

1. **PARCEL ID(S): 02-05.0-401-002.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN THE BACK.
3. TOTAL EXCAVATION IS: 83 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



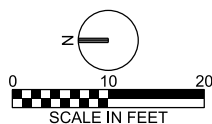
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FIGURE C-049
COOKSON ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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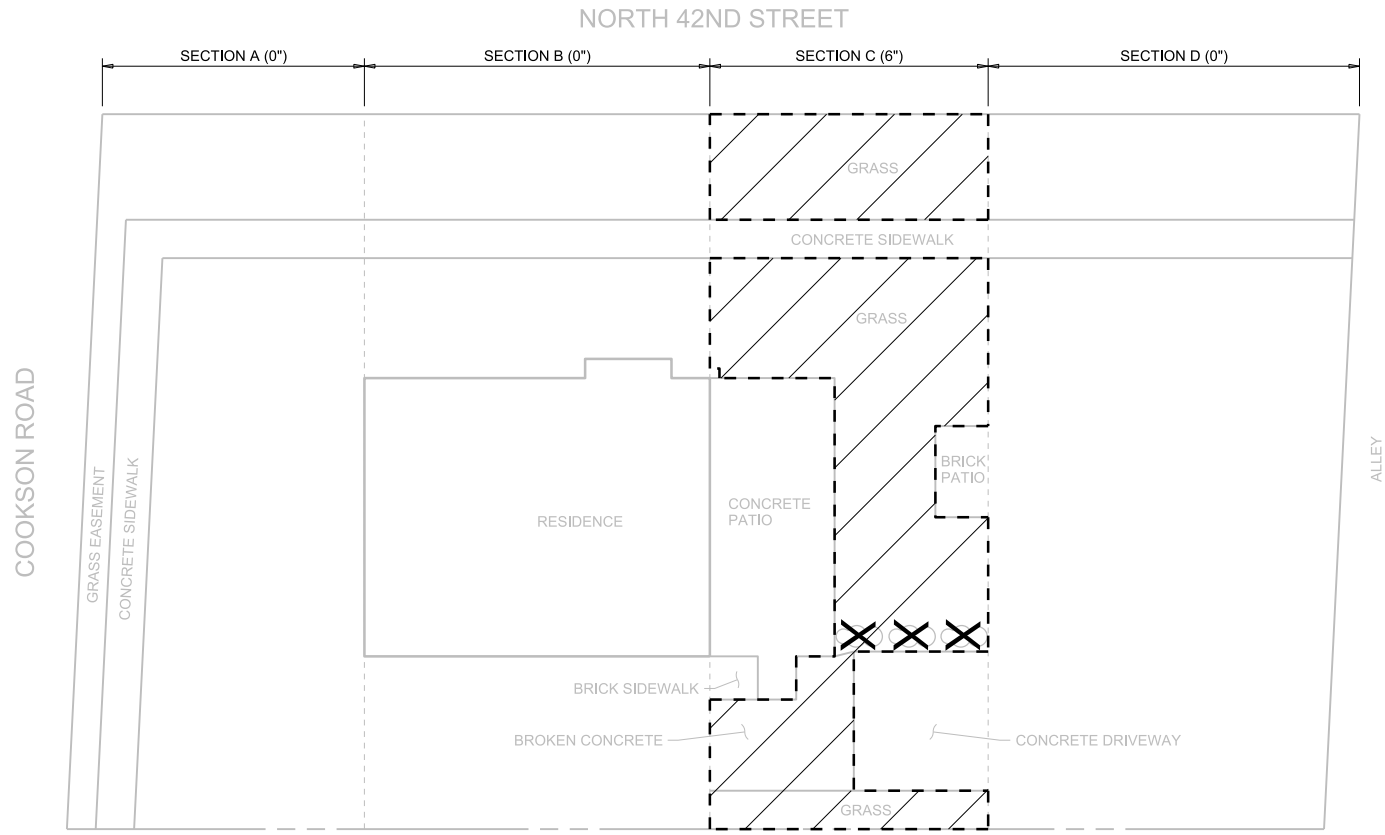
NOTES:

1. **PARCEL ID(S): 02-09.0-102-096.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY.
3. TOTAL EXCAVATION IS: 28 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
65. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



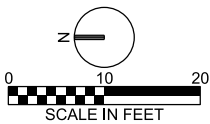
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FIGURE C-050
COOKSON ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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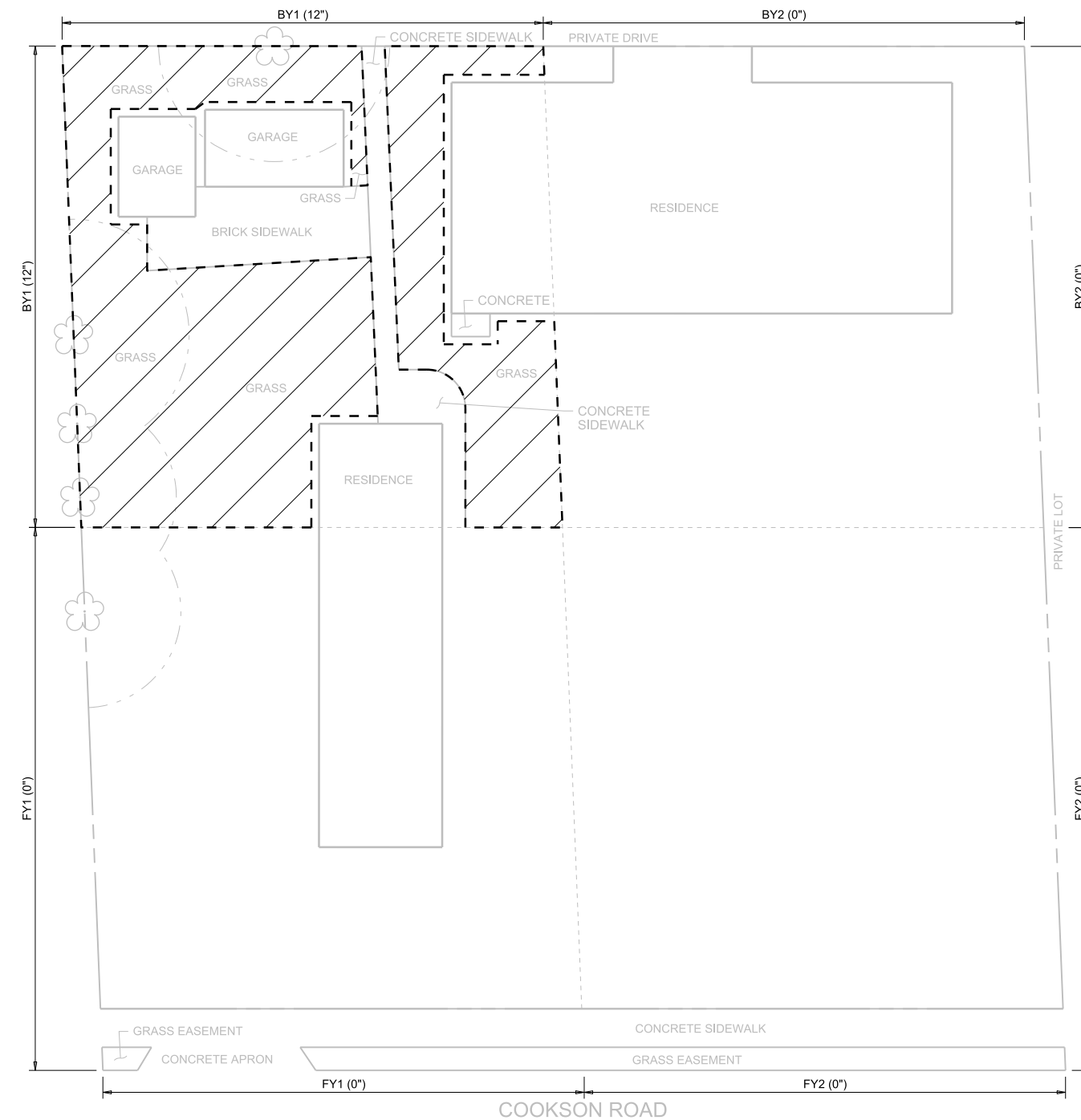
NOTES:

1. **PARCEL ID(S): 02-09.0-106-078.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION C.
3. TOTAL EXCAVATION IS: 25 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



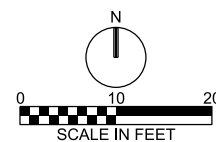
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FIGURE C-051
COOKSON ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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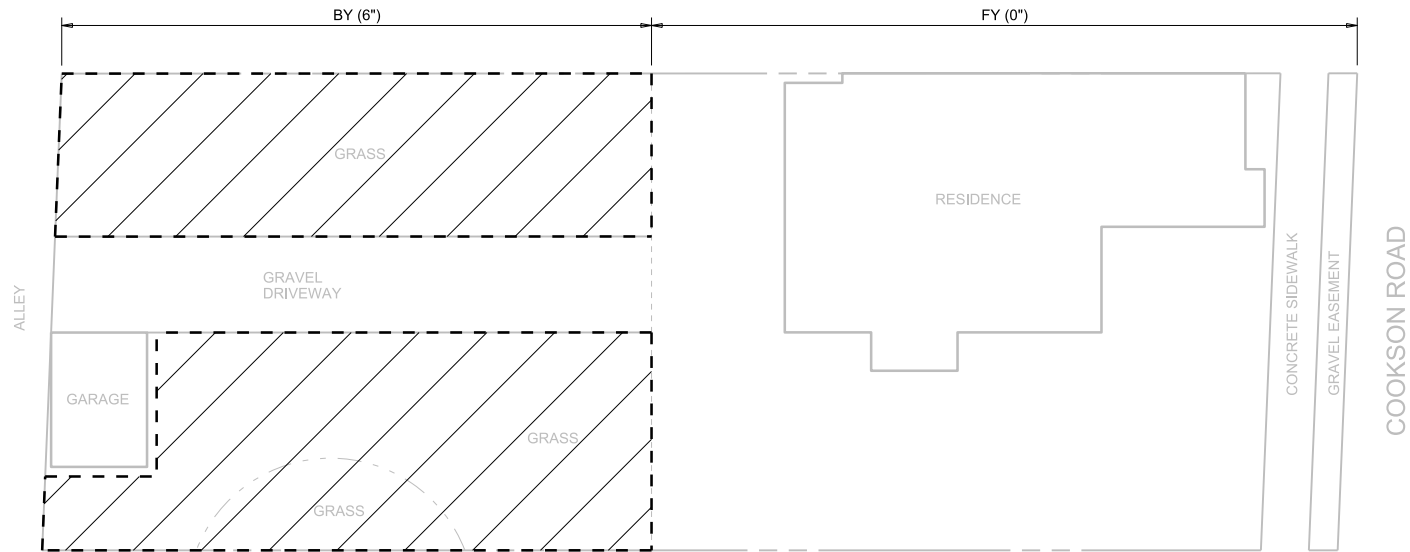
NOTES:

1. **PARCEL ID(S): 02-04.0-312-074.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN BY1.
3. TOTAL EXCAVATION IS: 65 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



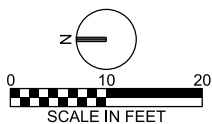
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FIGURE C-052
COOKSON ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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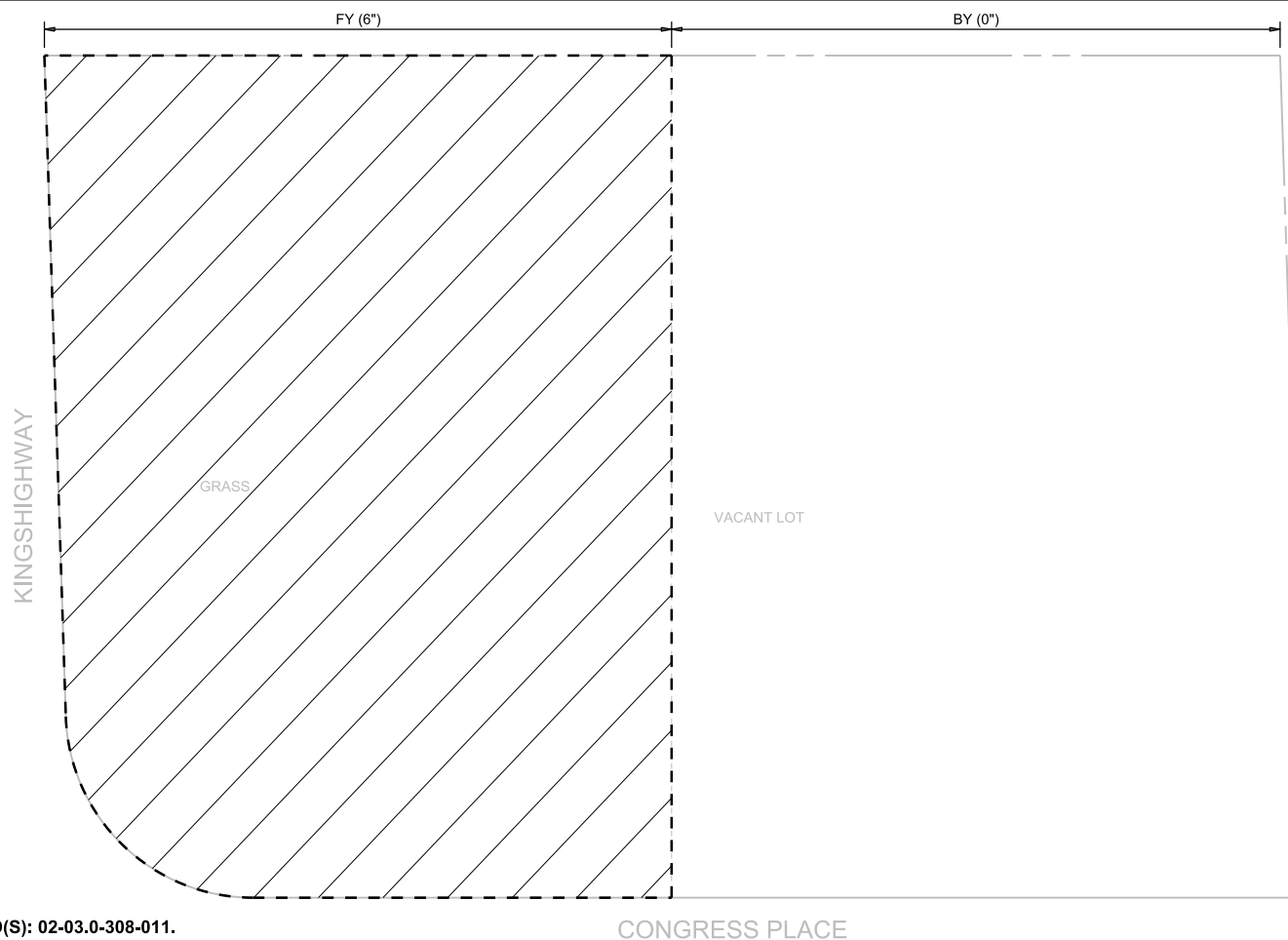
NOTES:

1. **PARCEL ID(S): 02-04.0-314-072.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 40 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER, PROPERTY FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



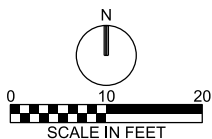
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FIGURE C-053
COOKSON ROAD
 OLD AMERICAN ZINC SUPERFUND SITE
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NOTES:

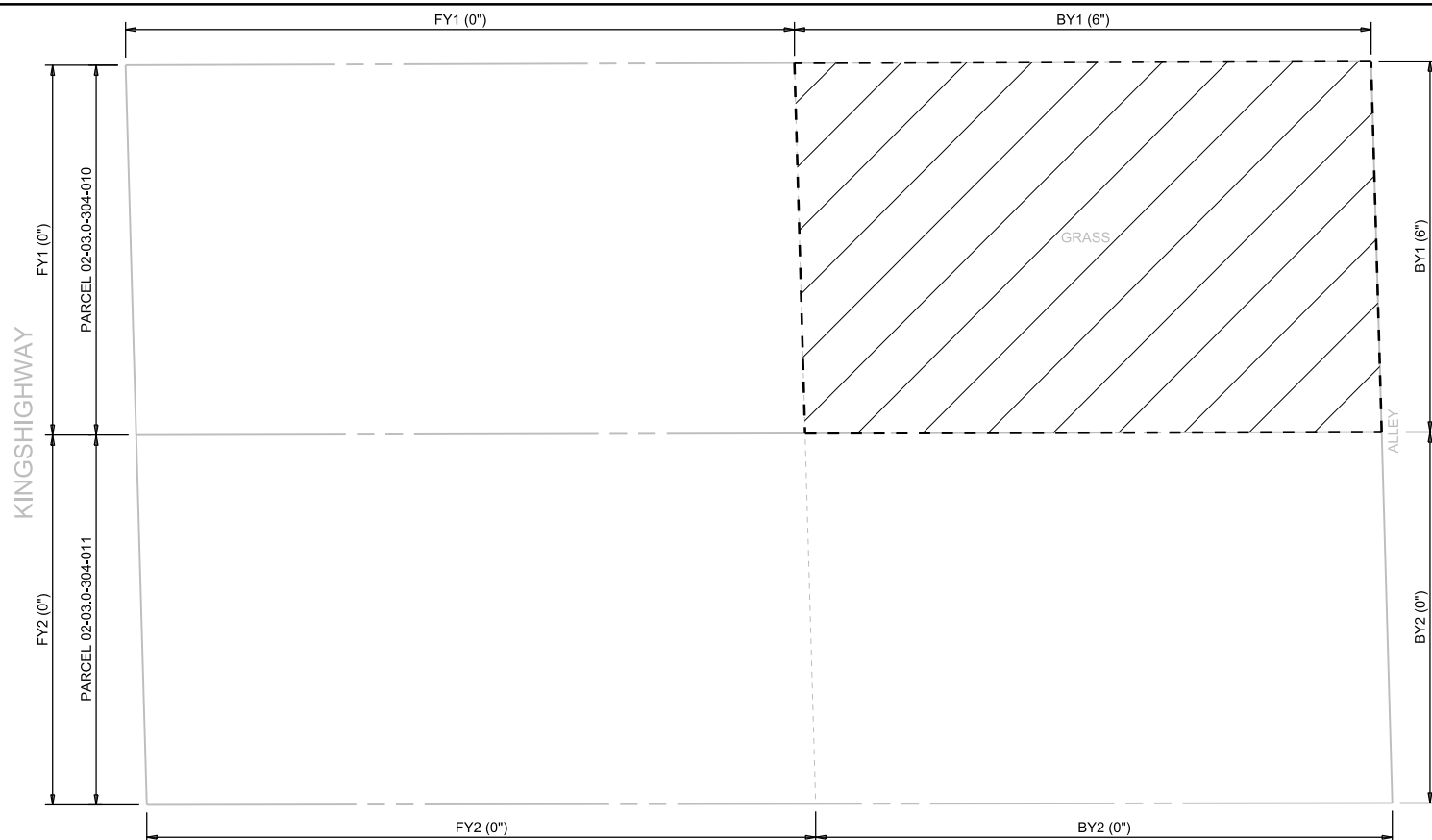
1. **PARCEL ID(S): 02-03.0-308-011.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN FY.
3. TOTAL EXCAVATION IS: 107 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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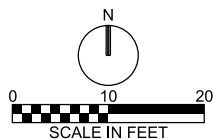
FIGURE C-054
KINGSHIGHWAY (02-03.0-308-011)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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NOTES:

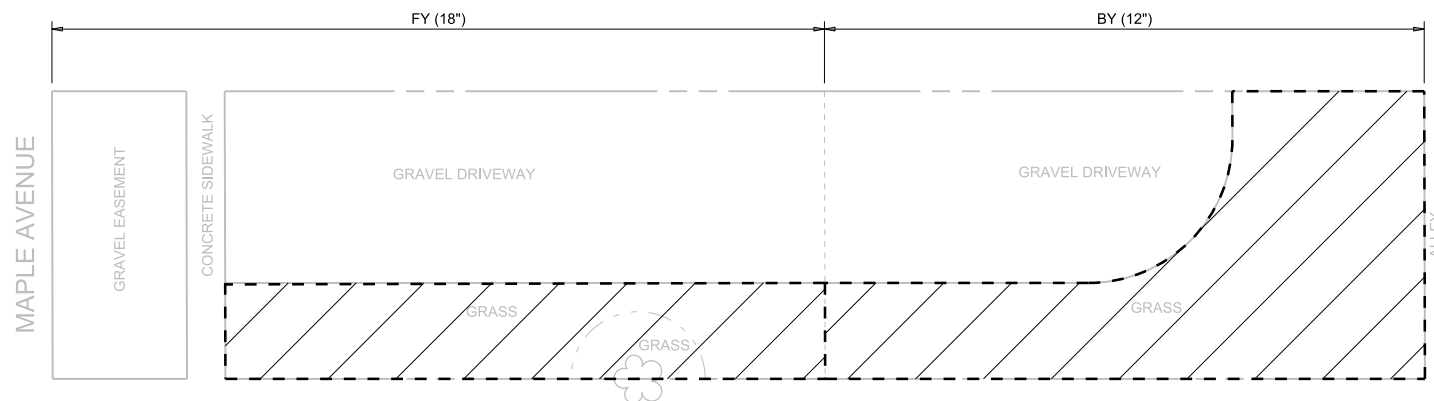
1. **PARCEL ID(S): 02-03.0-304-010 AND 02-03.0-304-011.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY1.
3. TOTAL EXCAVATION IS: 47 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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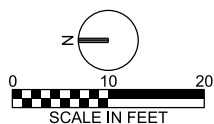
KINGSHIGHWAY AND KINGSHIGHWAY (02-03.0-304-010)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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NOTES:

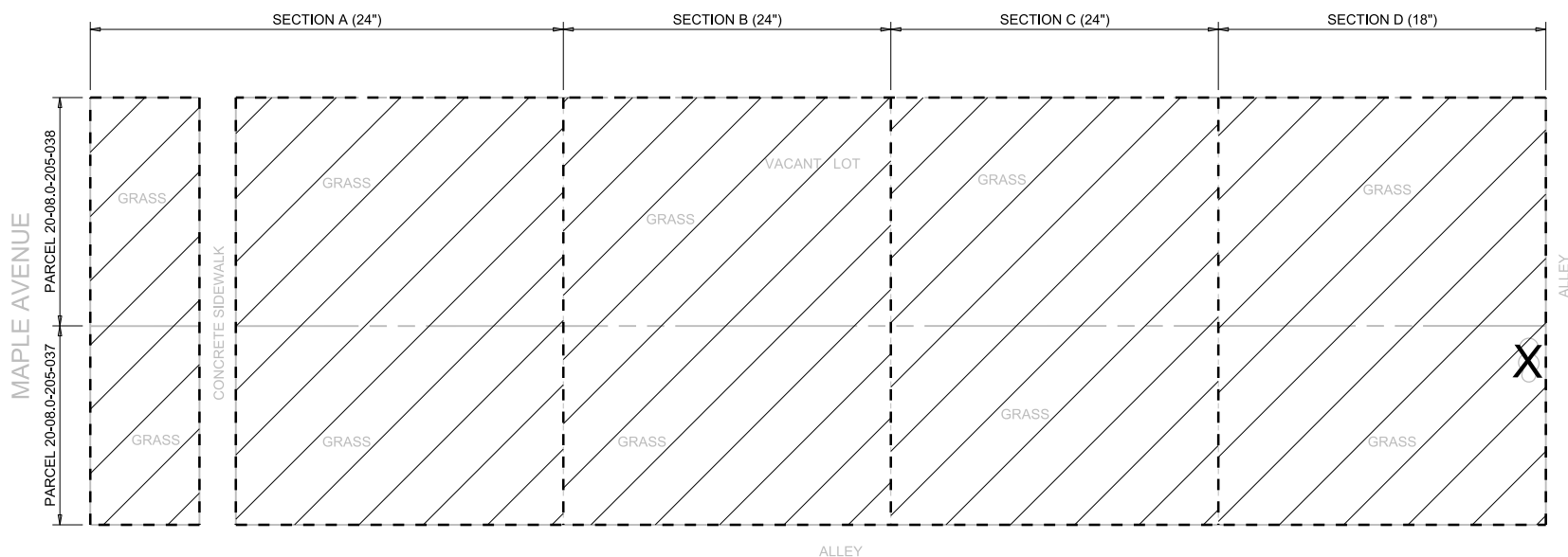
1. **PARCEL ID(S): 02-09.0-103-022.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN FY AND 12 INCHES IN BY.
3. TOTAL EXCAVATION IS: 71 CY
4. PERFORM XRF SCREENING AT BOTTOM OF 18 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
7. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



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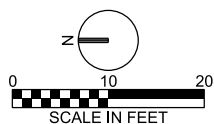
FIGURE C-056
MAPLE AVENUE (02-09.0-103-022)

OLD AMERICAN ZINC SUPERFUND SITE
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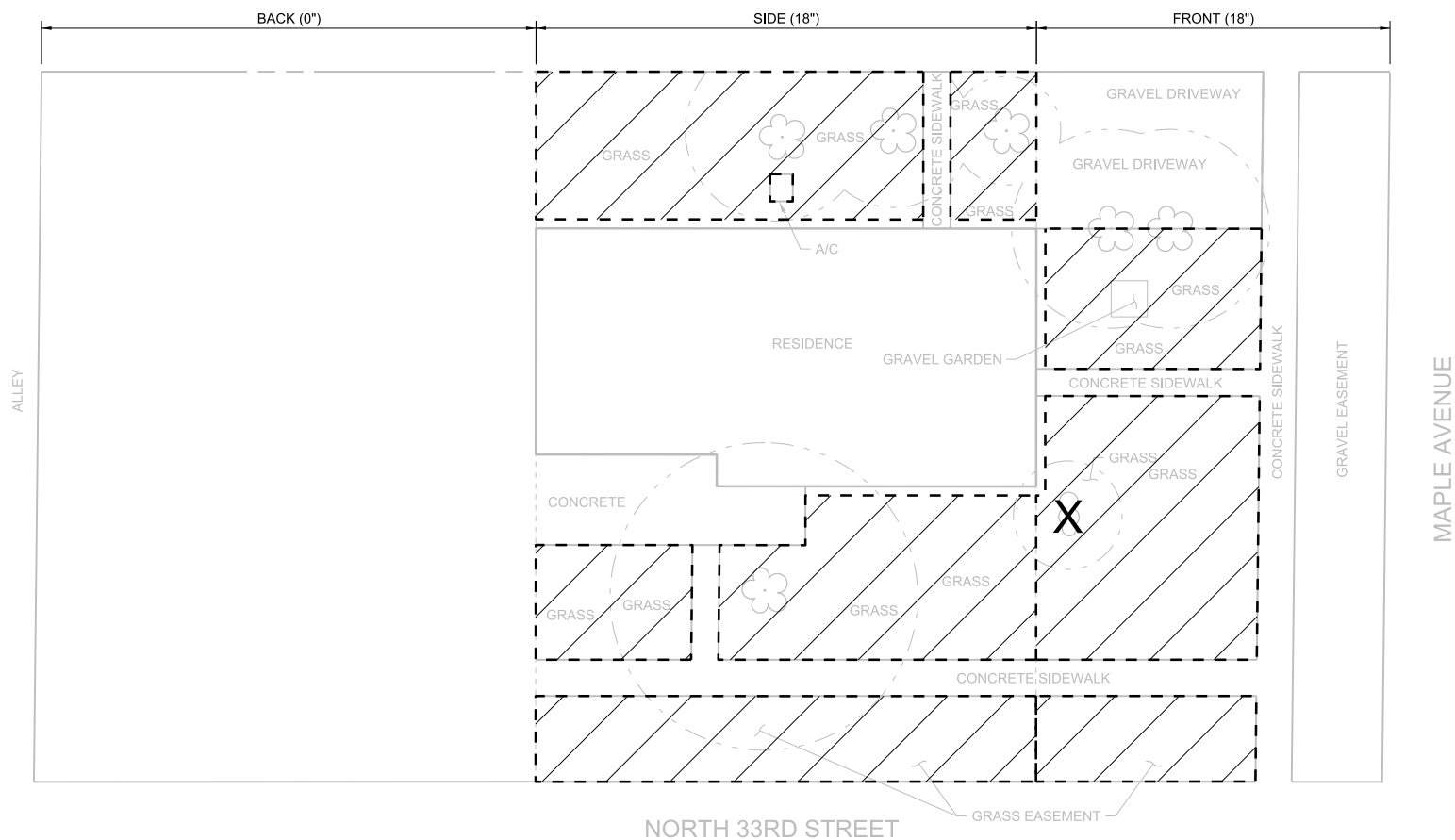
NOTES:

1. **PARCEL ID(S): 02-08.0-205-037 AND 02-08.0-205-038.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN SECTION A, 24 INCHES IN SECTION B, 24 INCHES IN SECTION C, AND 18 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 505 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PERFORM XRF SCREENING AT BOTTOM OF 24 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
6. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
7. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



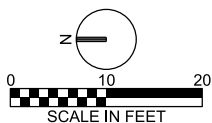
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FIGURE C-057
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
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NOTES:

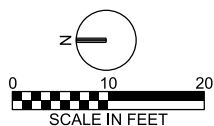
1. **PARCEL ID(S): 02-08.0-202-074.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN THE FRONT AND 18 INCHES IN THE SIDE.
3. TOTAL EXCAVATION IS: 126 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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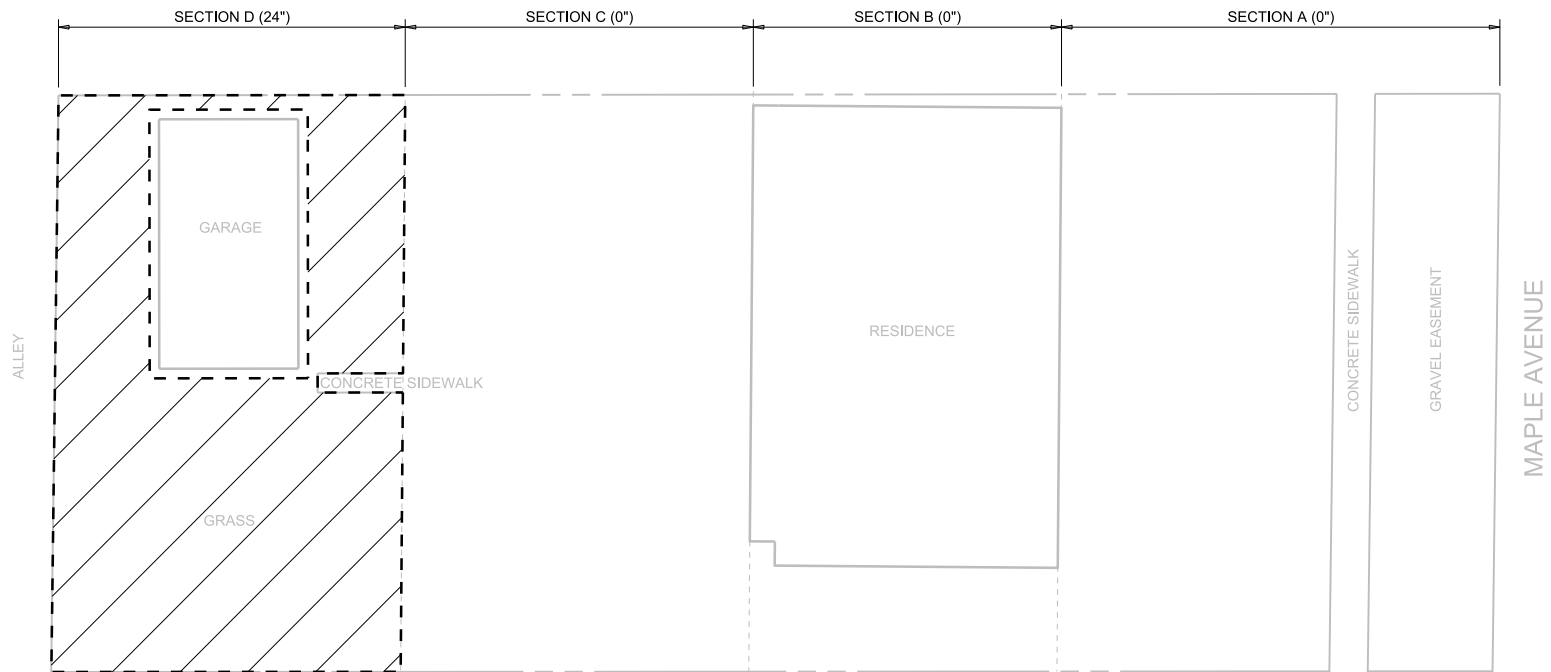
FIGURE C-058
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



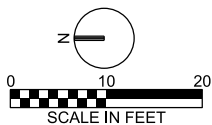
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FIGURE C-059
 MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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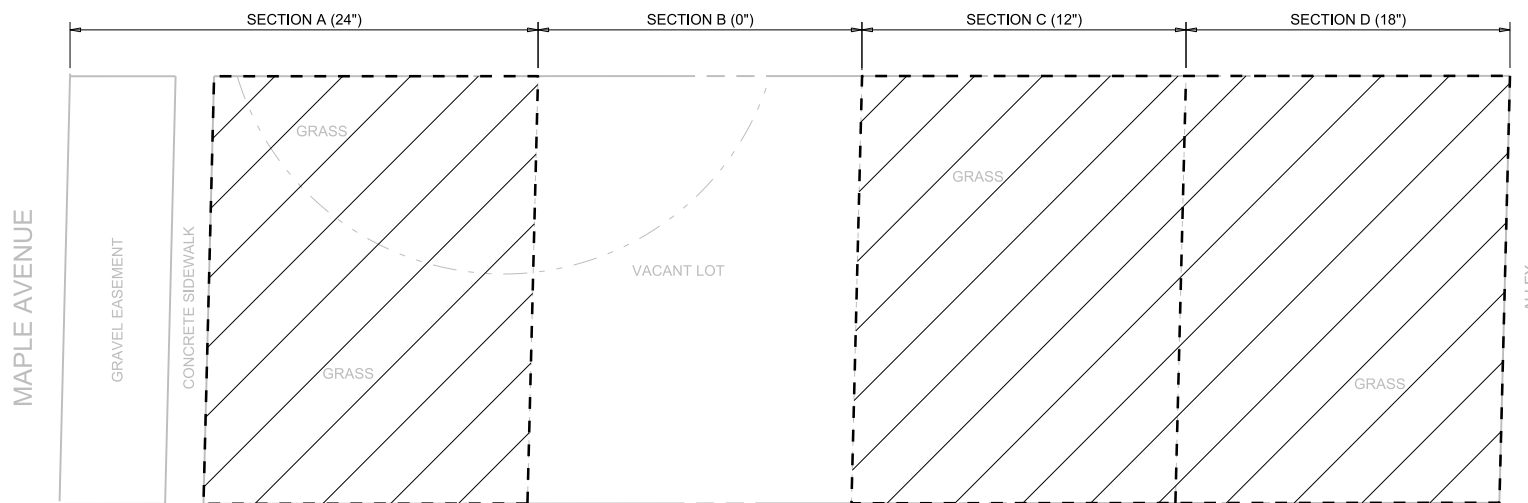
NOTES:

1. **PARCEL ID(S): 02-08.0-202-071.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 118 CY
4. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



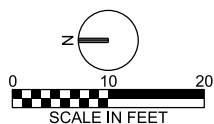
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FIGURE C-060
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
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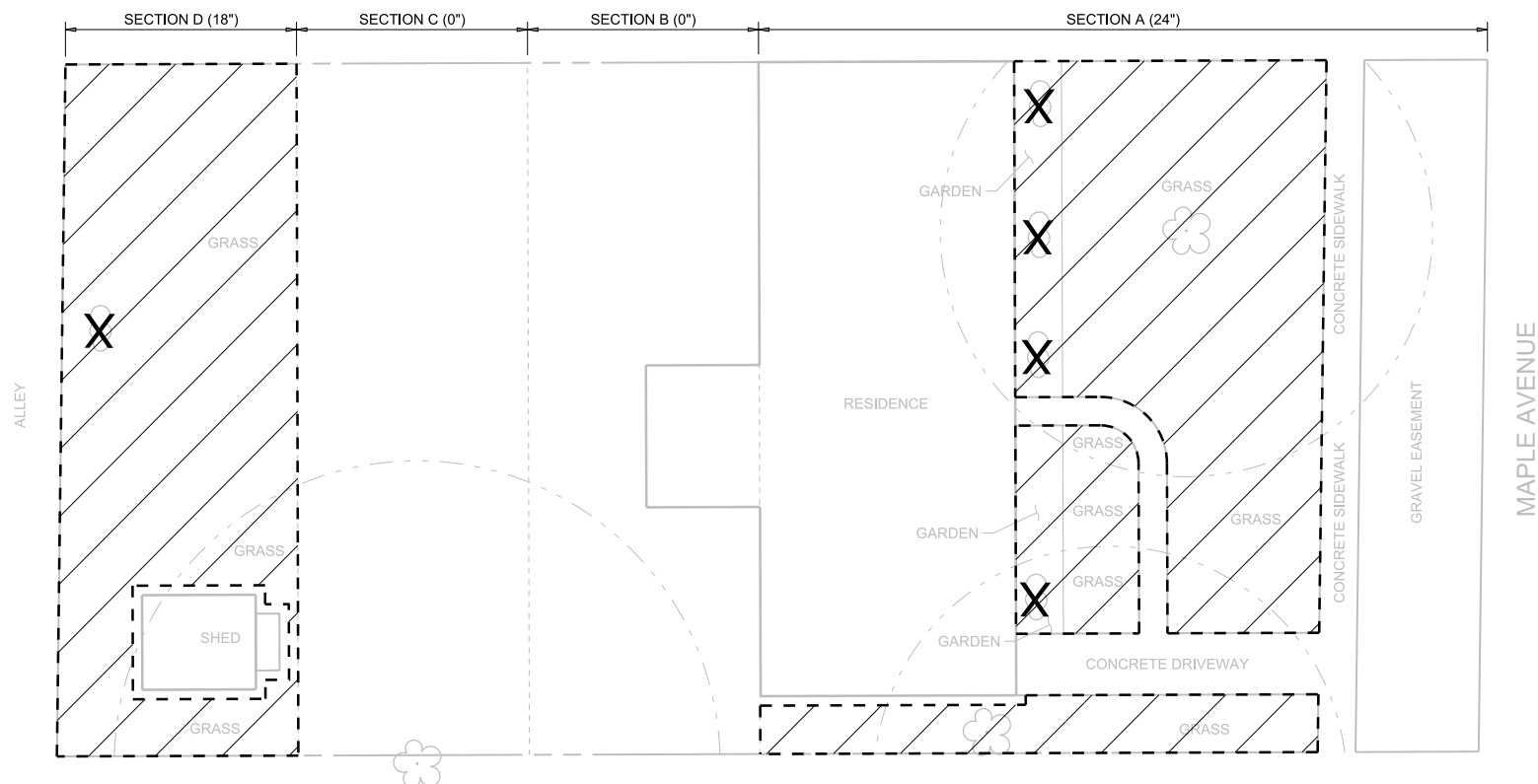
NOTES:

1. **PARCEL ID(S): 02-08.0-207-005.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN SECTION A, 12 INCHES IN SECTION C, AND 18 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 217 CY
4. PERFORM XRF SCREENING AT BOTTOM OF 24 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



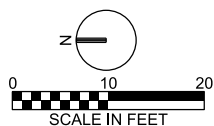
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FIGURE C-061
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
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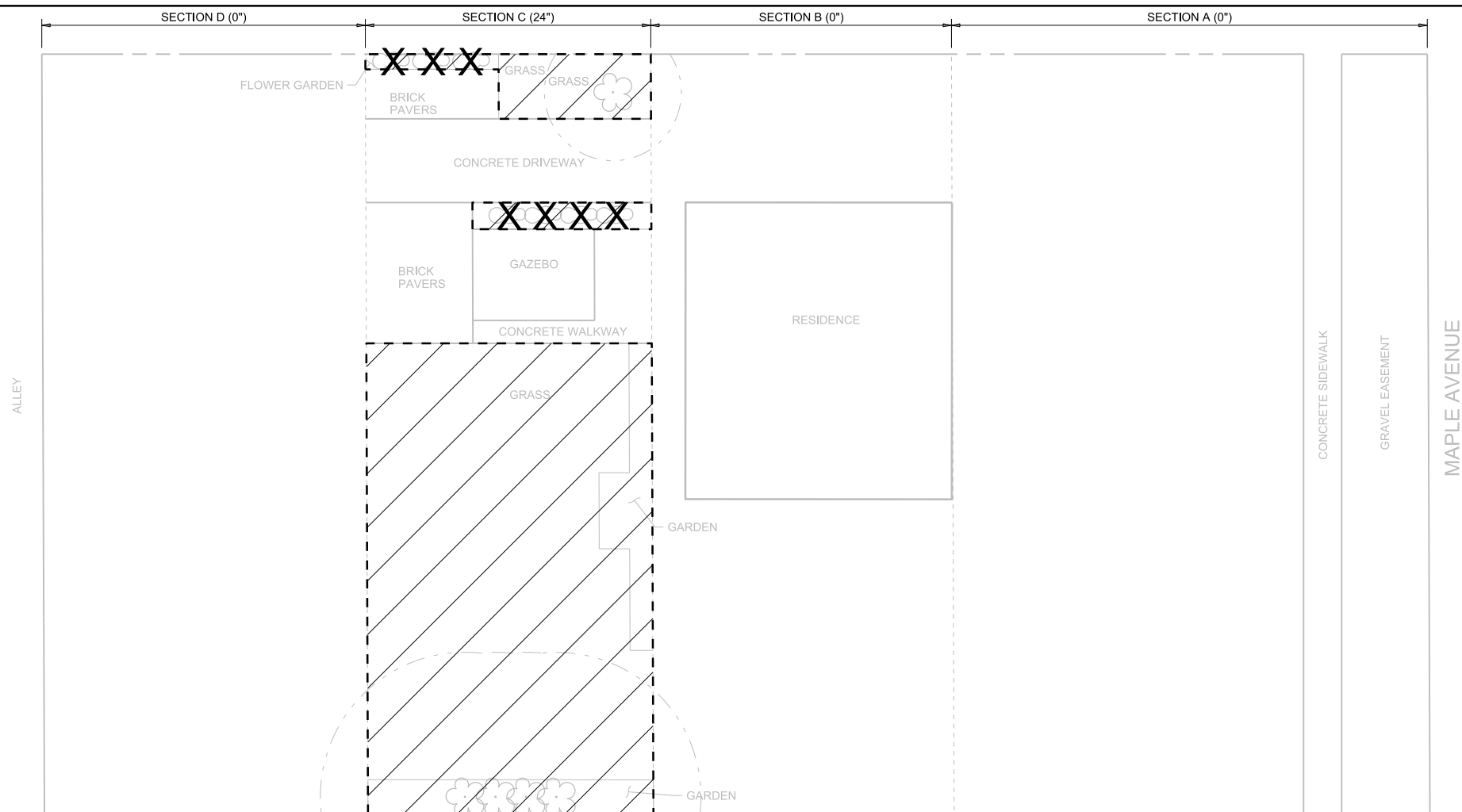
NOTES:

1. **PARCEL ID(S): 02-08.0-202-072.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN SECTION A AND 18 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 128 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS. IN GARDEN AREA, ONE FOOT WIDE MANUAL EXCAVATION ALONG RESIDENCE.
5. PERFORM XRF SCREENING AT BOTTOM OF 24 INCH EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.
6. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES (E.G. FENCING) MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
7. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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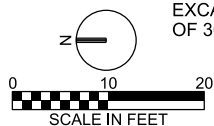
FIGURE C-062
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

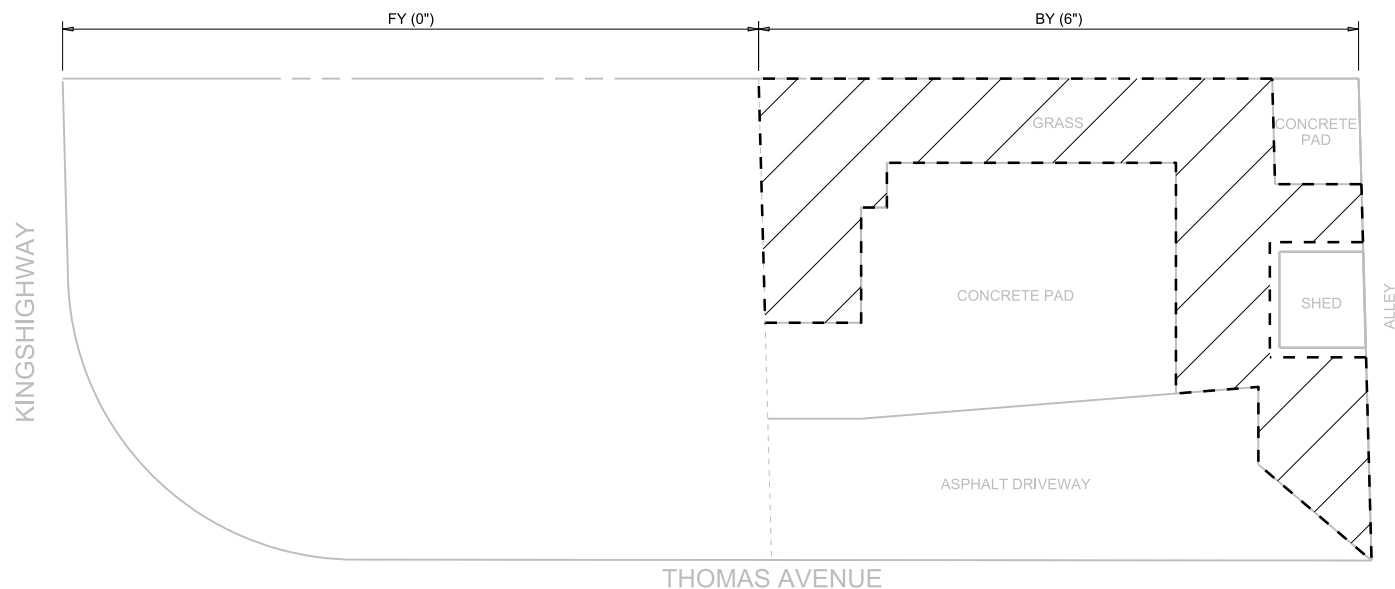
1. **PARCEL ID(S): 02-09.0-102-054.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 24 INCHES IN SECTION C.
3. TOTAL EXCAVATION IS: 131 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PERFORM XRF SCREENING AT BOTTOM OF EXCAVATION. ADDITIONAL EXCAVATION WILL BE PERFORMED PENDING XRF RESULTS TO A MAXIMUM OF 30 INCHES BGS.

6. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
7. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



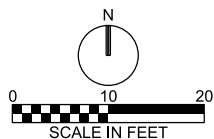
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FIGURE C-063
MAPLE AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



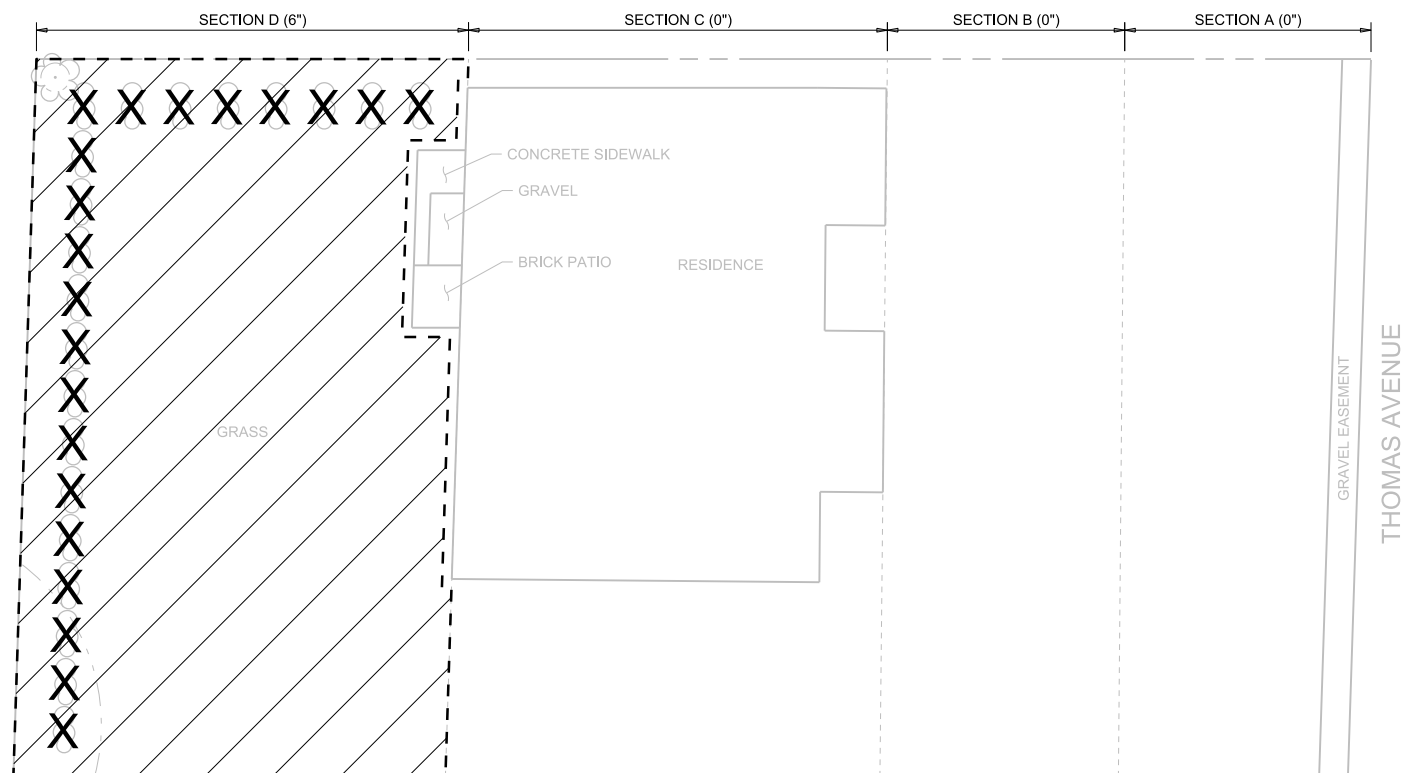
NOTES:

1. **PARCEL ID(S): 02-03.0-304-012.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN BY.
3. TOTAL EXCAVATION IS: 20 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.
6. DESIGN IS BASED ON A PROPERTY SKETCH PREPARED IN 2002, COUNTY ASSESSOR'S PARCEL BOUNDARIES, AND 2015 AERIAL PHOTOGRAPHY. MAJOR PROPERTY FEATURES WERE REVIEWED IN 2017; HOWEVER FEATURES WERE NOT MEASURED DUE TO ACCESS ISSUES AND MAY NOT REFLECT CURRENT CONDITIONS.



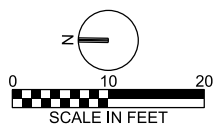
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FIGURE C-064
THOMAS AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



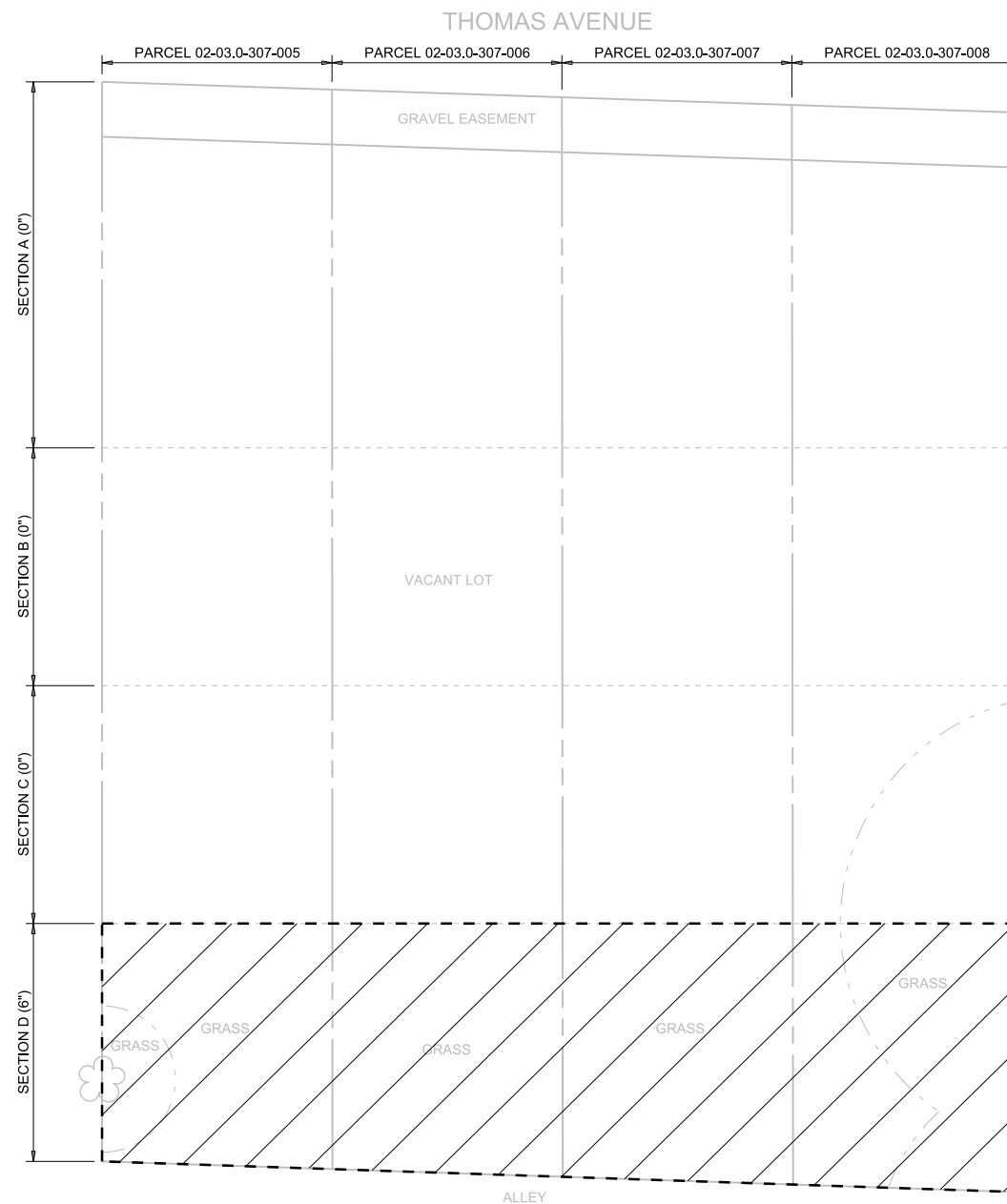
NOTES:

1. **PARCEL ID(S): 02-03.0-305-059.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 58 CY
4. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
5. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
6. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



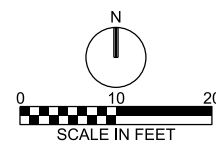
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FIGURE C-065
THOMAS AVENUE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTES:

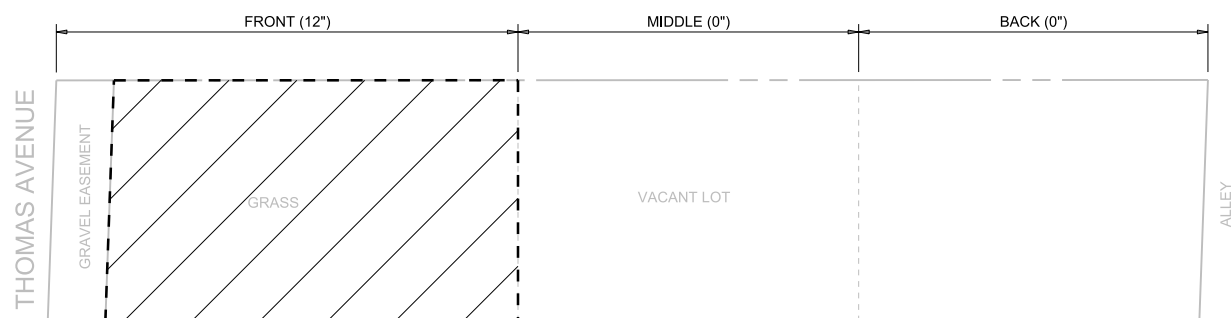
1. **PARCEL ID(S): 02-03.0-307-005, 02-03.0-307-006, 02-03.0-307-007, AND 02-03.0-307-008.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION D.
3. TOTAL EXCAVATION IS: 48 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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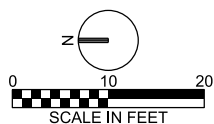
FIGURE C-066
THOMAS AVENUE (02-03.0-307-005, 02-03.0-307-006, 02-03.0-307-007, AND 02-03.0-307-008)

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



NOTES:

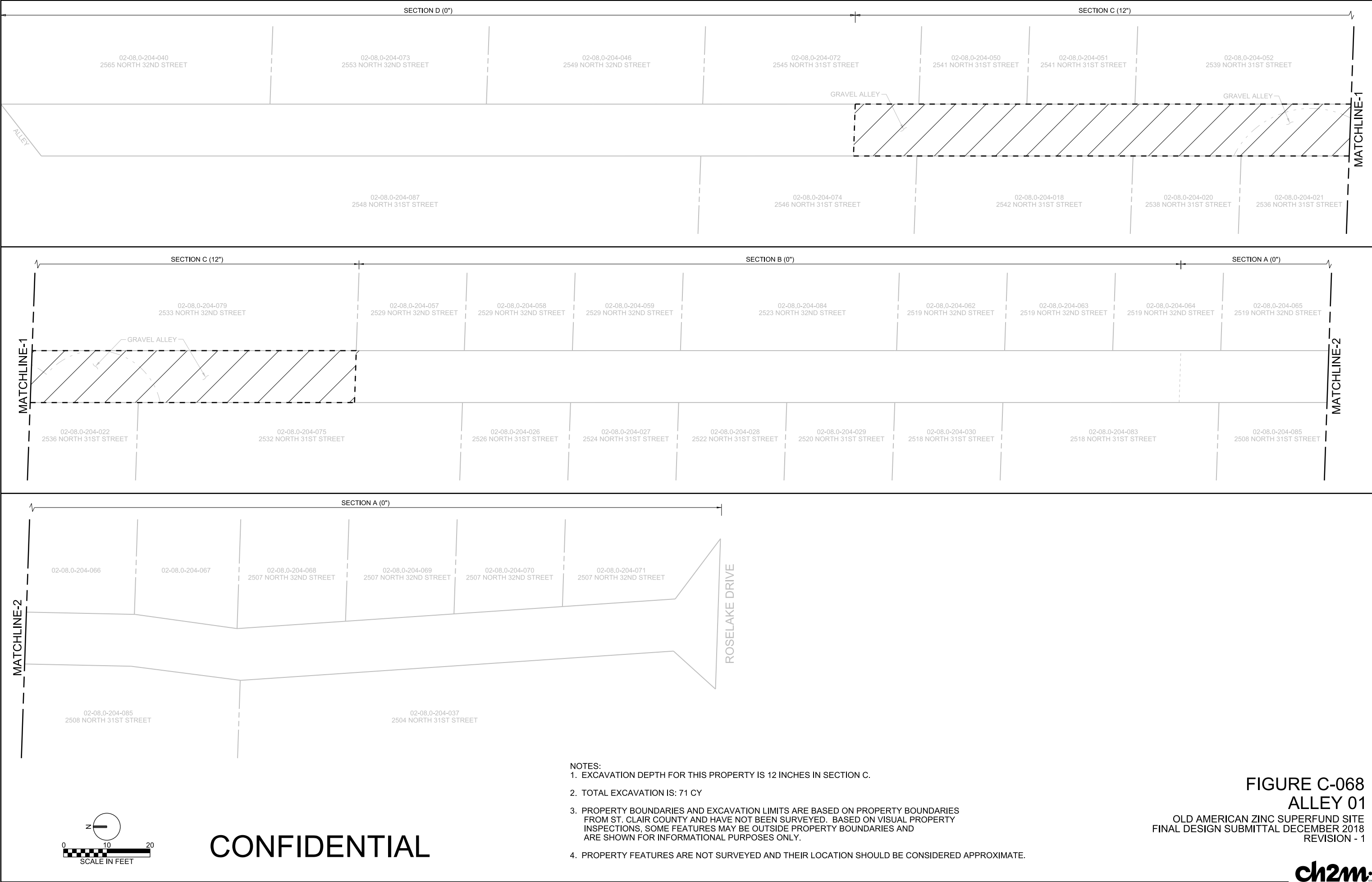
1. **PARCEL ID(S): 02-03.0-307-011.**
2. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN THE FRONT.
3. TOTAL EXCAVATION IS: 40 CY
4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES (E.G. FENCING) MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

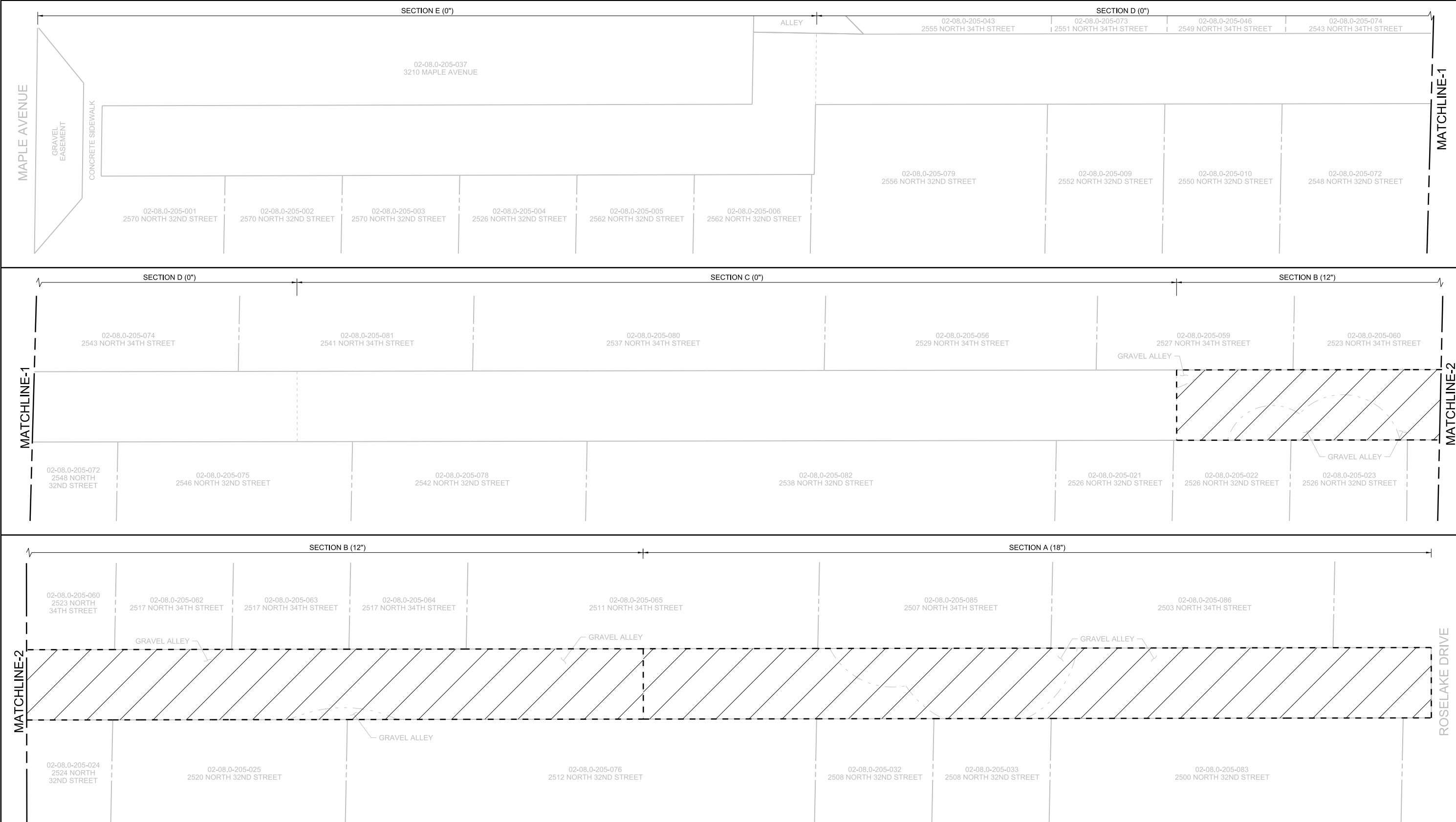


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FIGURE C-067
THOMAS AVENUE (02-03.0-307-011)

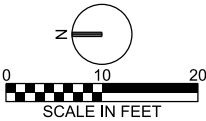
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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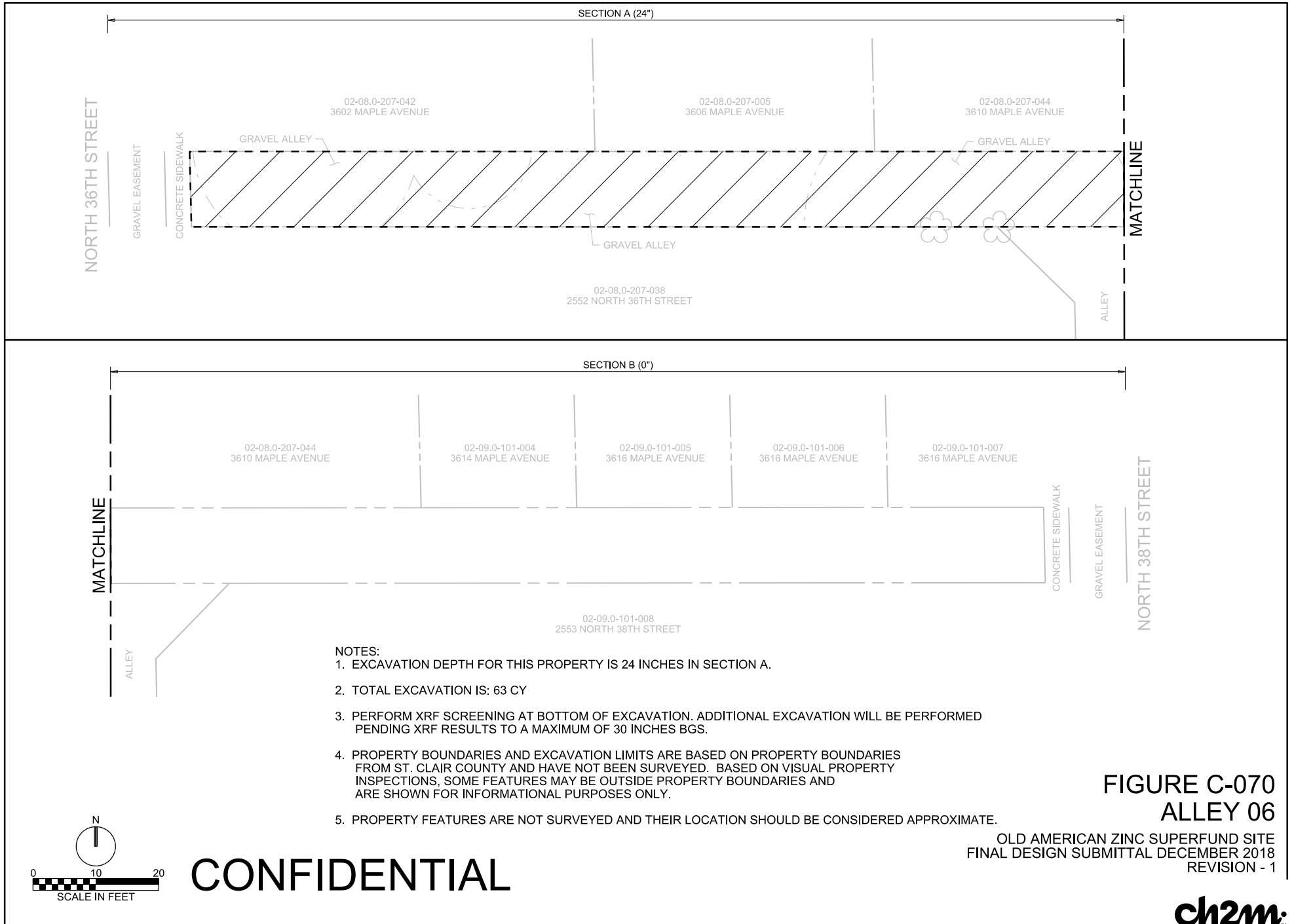


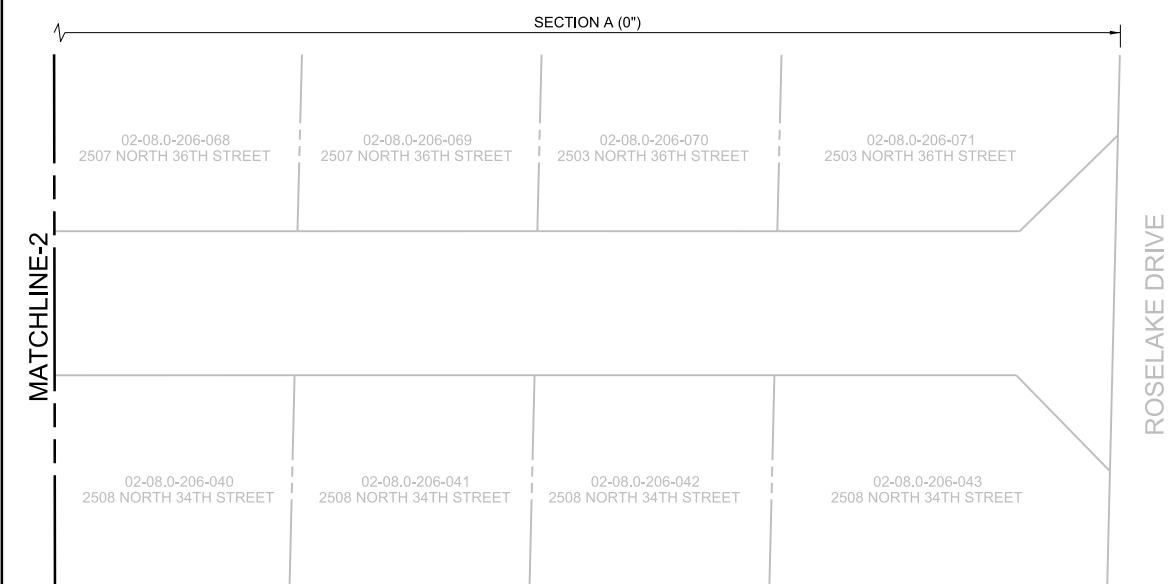
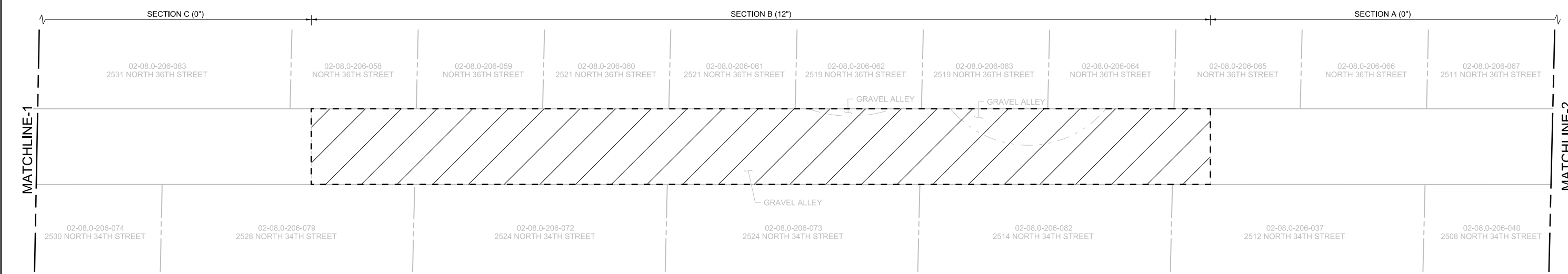
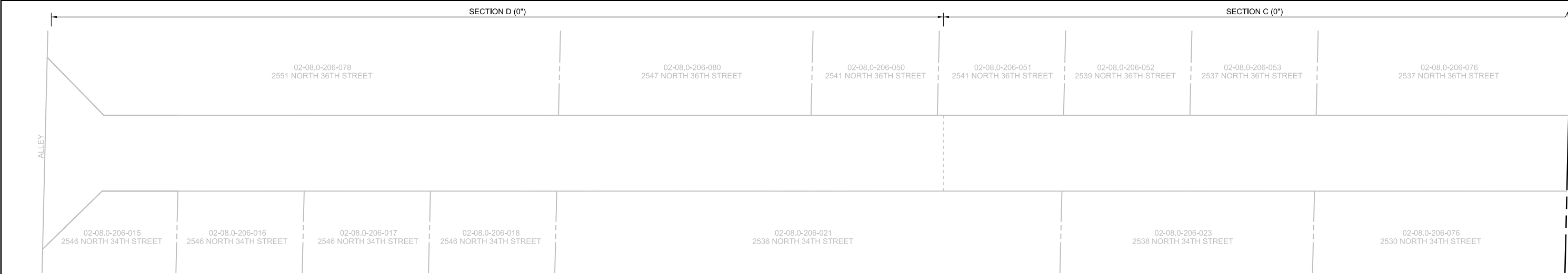
- NOTES:
- EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN SECTION A AND 12 INCHES IN SECTION B.
 - TOTAL EXCAVATION IS: 213 CY
 - PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 - PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

FIGURE C-069
ALLEY 03
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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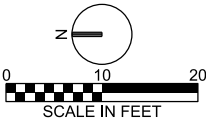
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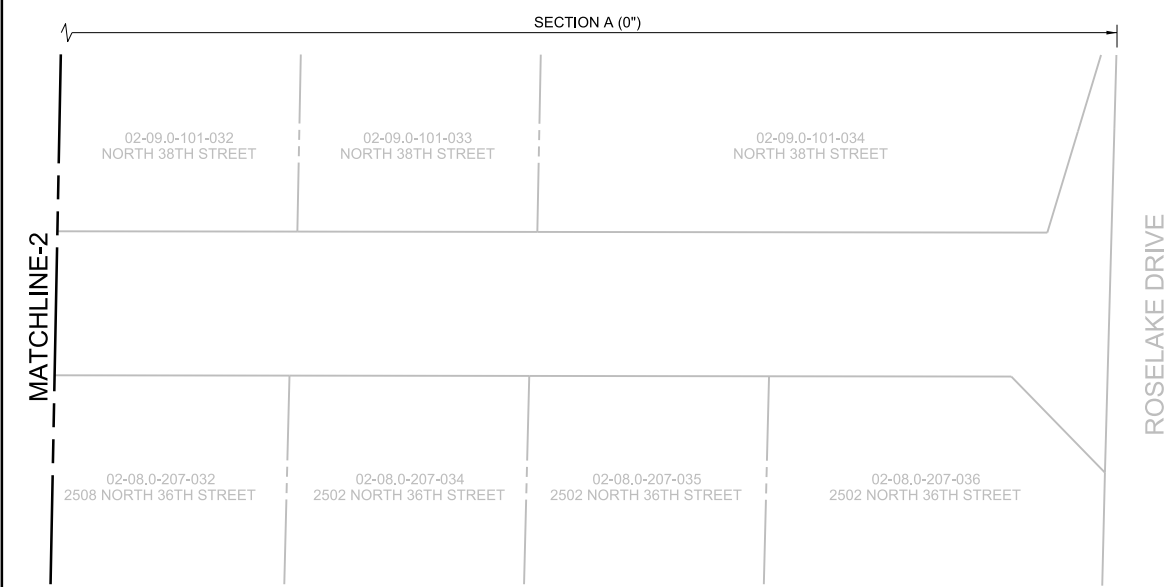
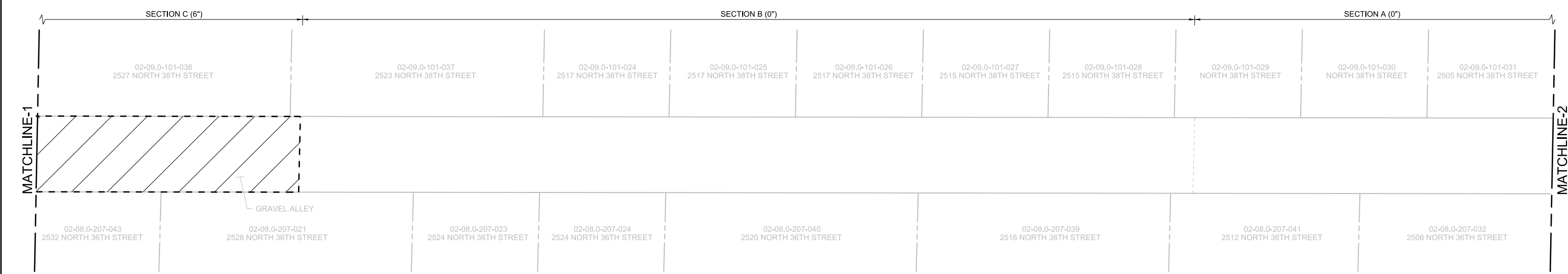
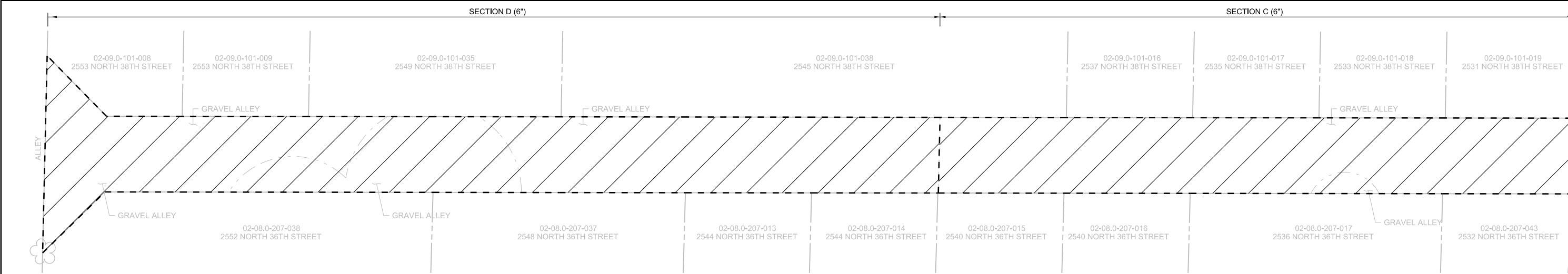


- NOTES:
- EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION B.
 - TOTAL EXCAVATION IS: 95 CY
 - PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 - PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

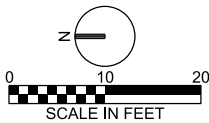
FIGURE C-071
ALLEY 07
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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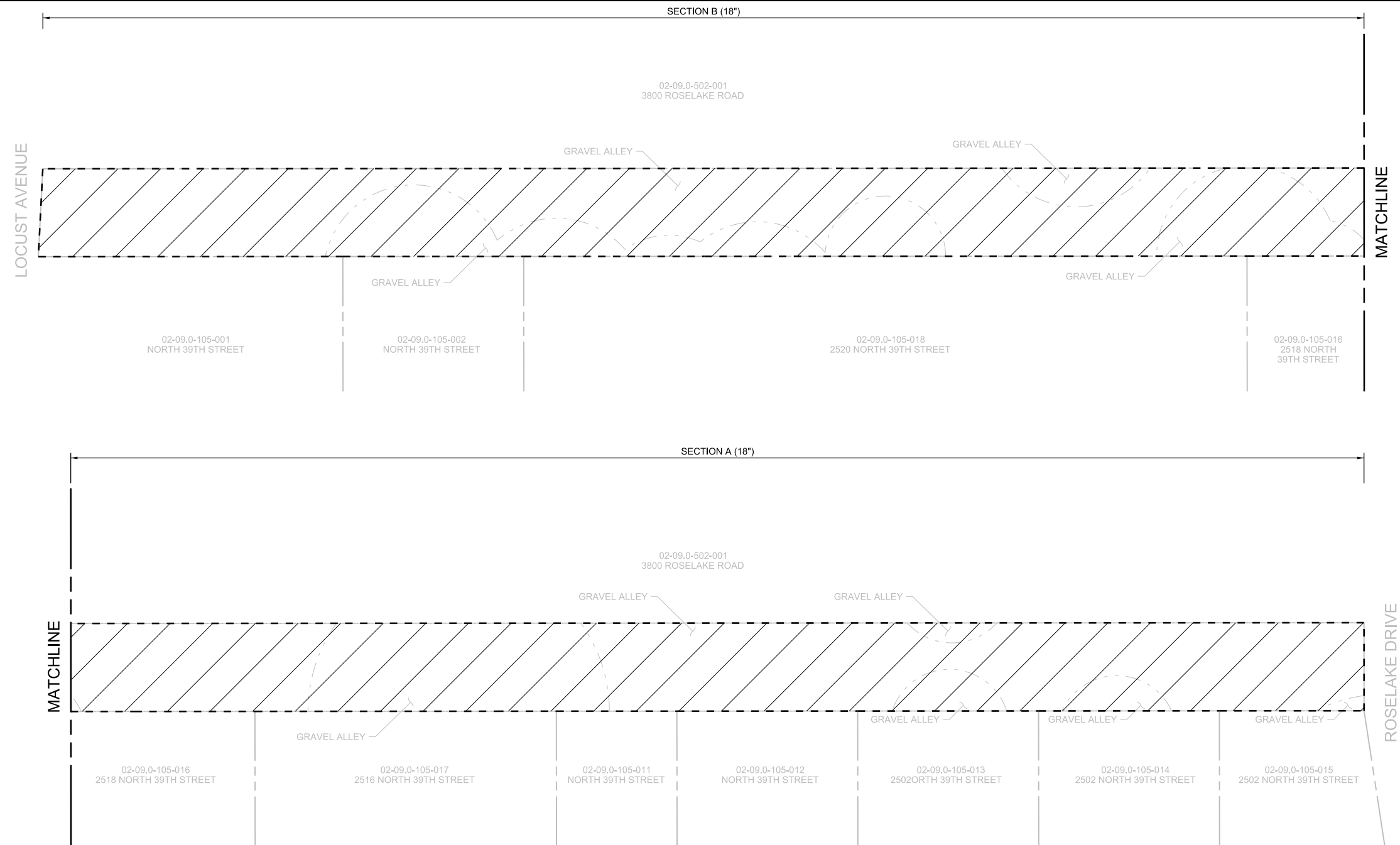


- NOTES:
- EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION C AND 6 INCHES IN SECTION D.
 - TOTAL EXCAVATION IS: 96 CY
 - PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 - PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

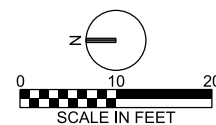


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FIGURE C-072
ALLEY 08
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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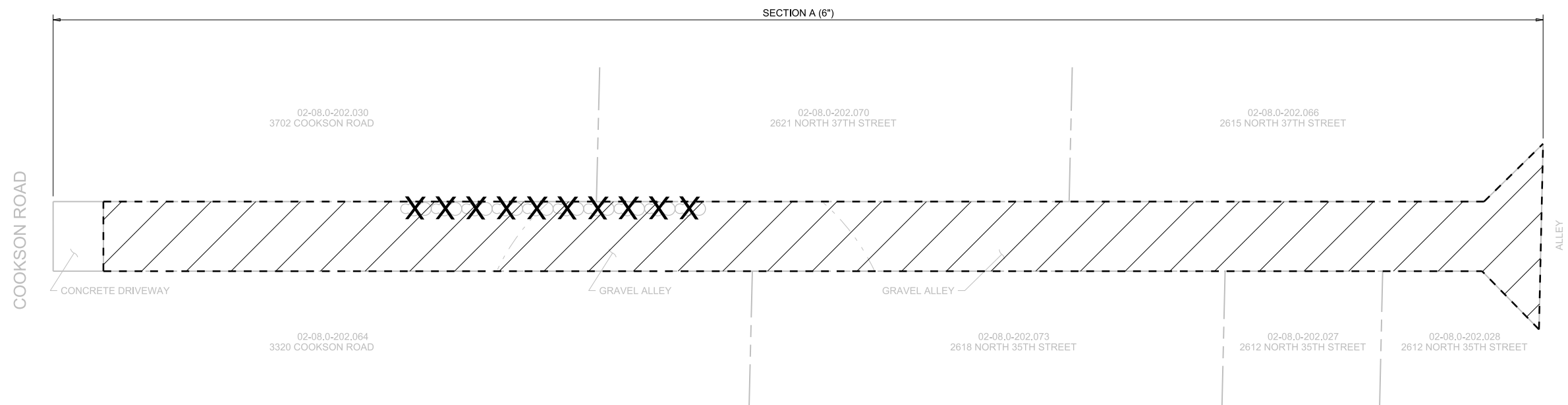


- NOTES:
1. EXCAVATION DEPTH FOR THIS PROPERTY IS 18 INCHES IN SECTION A AND 18 INCHES IN SECTION B.
 2. TOTAL EXCAVATION IS: 263 CY
 3. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 4. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

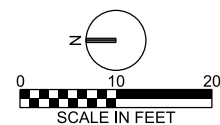


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FIGURE C-073
ALLEY 10
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
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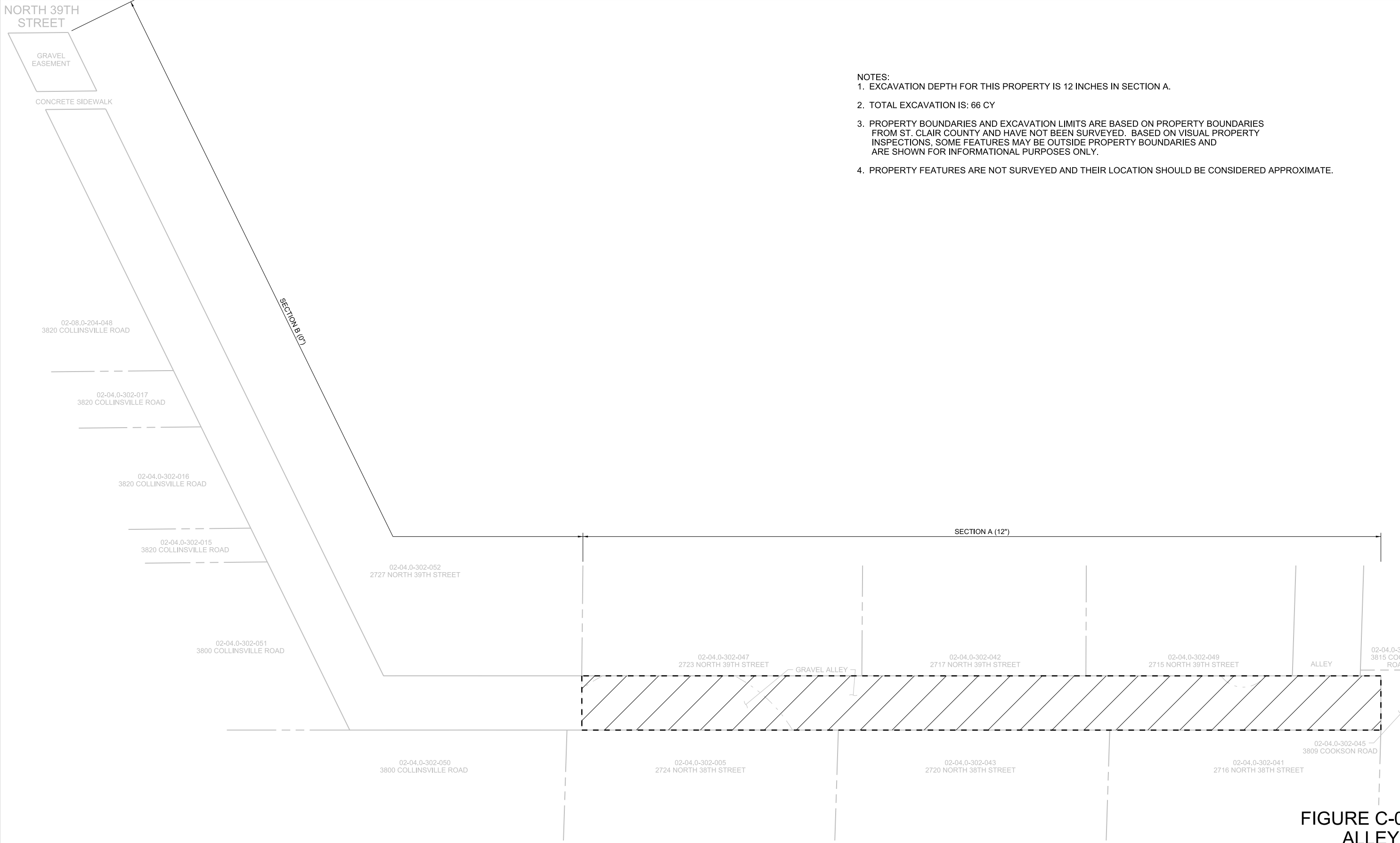


- NOTES:
1. EXCAVATION DEPTH FOR THIS PROPERTY IS 6 INCHES IN SECTION A.
 2. TOTAL EXCAVATION IS: 44 CY
 3. PERFORM XRF SCREENING IN GARDEN AREA AND/OR AREA AROUND SHRUBS. AREA(S) WILL BE EXCAVATED PENDING XRF SCREENING RESULTS.
 4. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 5. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.



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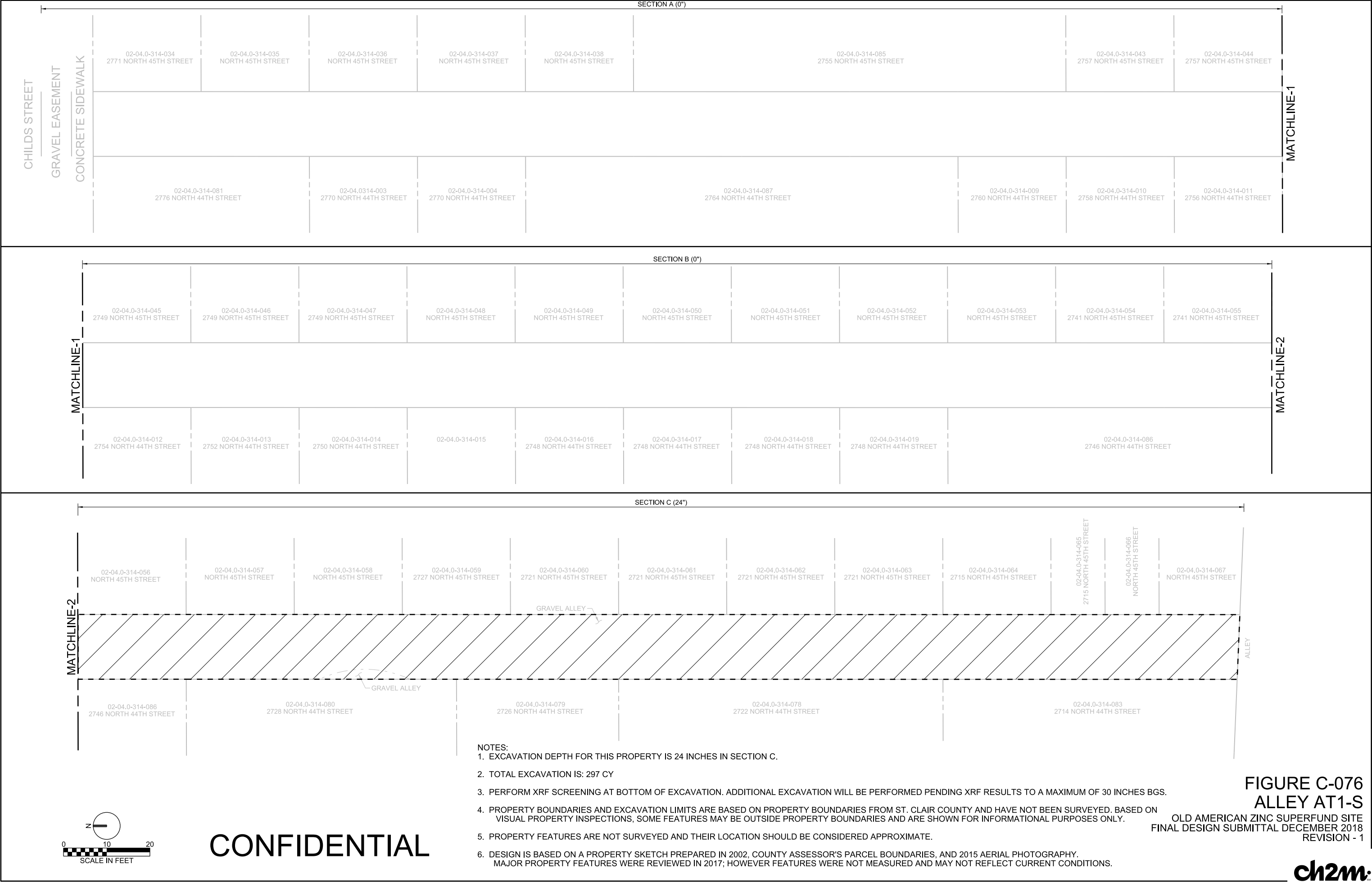
FIGURE C-074
ALLEY 15
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1



- NOTES:
- 1. EXCAVATION DEPTH FOR THIS PROPERTY IS 12 INCHES IN SECTION A.
 - 2. TOTAL EXCAVATION IS: 66 CY
 - 3. PROPERTY BOUNDARIES AND EXCAVATION LIMITS ARE BASED ON PROPERTY BOUNDARIES FROM ST. CLAIR COUNTY AND HAVE NOT BEEN SURVEYED. BASED ON VISUAL PROPERTY INSPECTIONS, SOME FEATURES MAY BE OUTSIDE PROPERTY BOUNDARIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.
 - 4. PROPERTY FEATURES ARE NOT SURVEYED AND THEIR LOCATION SHOULD BE CONSIDERED APPROXIMATE.

FIGURE C-075
ALLEY 16
OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

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Appendix B

Final Specifications

Final Design for

**U.S. Environmental Protection Agency
Fairmount City
St. Clair County, Illinois**

**Old American Zinc Plant Superfund Site
Surrounding Properties Remedial Design**

Project Number: 687729

Specifications

December 2018



SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

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SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

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END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work includes remediation and restoration of select portions (“yard areas”) of residential properties and alleyways with contaminated soils. The activities for satisfying the requirements for this project are summarized as follows:
1. Management of all Subcontractors and vendor activities onsite during the execution of this Work.
 2. Coordination with other Contractors.
 3. Performance of a wetland delineation, jurisdictional determination and development of mitigation measures, if required, in accordance with USACE protocols as described in Section and as described in Section 02 24 00, Delineation of Wetlands and Other Waters of the United States.
 4. Mobilization of Contractor personnel, equipment, any Subcontractors, and materials to the project site as identified in Section 01 50 00, Temporary Facilities and Controls.
 5. Site preparation, including preparation of storage and staging area(s). Implement endangered species and migratory bird protocols per Section 01 31 00 Site Preparation if clearing and grubbing occurs between September 11 and March 31.
 6. Installing temporary facilities and controls as identified in Section 01 50 00, Temporary Facilities and Controls.
 7. Implementation of conservation measures for protected species as described in Section 31 10 00, Site Preparation.
 8. Coordination with the Owner’s Representative and property owner to develop a property specific plan as identified in Section 01 31 19, Project Meetings.
 9. Coordinating utility locates and installing erosion controls at residential properties as identified in Sections 31 10 00, Site Preparation and 31 23 16, Excavation.
 10. Excavation of contaminated soil from within designated yard areas and easements, as specified in Section 31 23 16, Excavation.
 11. Implementation of the Unanticipated Discovery Plan and Archaeological Monitoring Plan for Cultural Resources (UDP) where indicated by Owner and as described in 31 23 16, Excavation.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

12. Transportation of contaminated soil from the residential properties as identified in Section 31 23 16, Excavation. Excavated soil will be transported to the Facility Area (FA) staging area for direct placement into the consolidation area or for staging.
13. If placed in the excavated soil staging pile, the excavated soil will be managed in accordance with the soil erosion and sediment control plan, and in accordance with Section 01 50 00, Temporary Facilities and Controls.
14. Management of stormwater during construction, as described in Section 01 50 00, Temporary Facilities and Controls.
15. Backfill of excavated area with general backfill, topsoil, select topsoil and gravel, and associated sampling of imported material, as specified in Section 31 23 23, Fill and Backfill and Section 32 91 13, Topsoil Preparation, respectively. Stockpiles of imported borrow materials at the FA will not exceed 2,000 cubic yards each.
16. Conducting preconstruction, post-excavation, and post-backfilling surveys at control points as specified in Section 01 31 13, Project Coordination, if deemed necessary by the Owner's Representative. If surveys are performed, they will be performed on the same x and y coordinate grid for each survey with supplemental points as necessary to capture grade changes.
17. Restoration of excavated surfaces and Work areas as specified in 32 91 26, Site Restoration.
18. Tree, shrub, and perennial replacement with species similar to those removed; and other vegetation if required by USFWS for threatened and endangered species habitat; and wetlands restoration if required.
19. Six-week watering and maintenance period for seed, trees, shrubs, and perennials.
20. Specific Tasks Not Mentioned: Specific tasks not mentioned or completely detailed in this SOW that are necessary or normally required as part of the Work described will be performed by the Contractor as incidental Work without extra costs to the Owner, Engineer, or Owner's Representative, as if fully detailed. The expense for such Work will be included in the applicable lump sum and unit prices for the Work described.

B. Roles: Defined for Old American Zinc Superfund Site, Surrounding Properties Soil Remediation.

1. Owner: U.S. Environmental Protection Agency, Region 5 (USEPA).
2. Engineer: Firm contracted by the USEPA to complete the remedial design (CH2M).
3. Property Owner: Property owner of individual property within the Old American Zinc Superfund Site, surrounding properties area.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

4. Tenant: Person(s) residing at the property, if different from Property Owner.
5. Owner's Representative: Construction Management Firm, or United States Army Corps of Engineers, which the USEPA has contracted to complete the remedial action.
6. Remedial Action Contractor (Contractor): Responsible for completing Work described, including but not limited to, site preparation, property surveys (if deemed necessary by Owner's Representative), excavation, transportation and disposal, backfill and compaction, and property and alleyway restoration. The Contractor is also responsible for management of all Subcontractors and vendor activities and coordination with other Contractors, as required. The Contractor will be contracted to the Owner's Representative.
7. Successful Bidder: The Bidder selected for Subcontract award prior to award of Subcontract.
8. Subcontractor: A Subcontractor retained by the Contractor.
9. Laboratory Subcontractor: Responsible for analysis of samples from the borrow sources, waste characterization, or other sources as necessary during the work. Compliance samples from borrow sources will be collected and sent to the Laboratory Contractor by the Owner's Representative. The Laboratory Contractor will be contracted to the Owner's Representative.

1.02 QUALIFICATIONS

- A. The Contractor will be licensed, insured, and bonded to operate in the state of Illinois and will comply with all applicable federal, state, county, township, village, and local laws and regulations. In the event of conflict, the most stringent of these regulations will apply.

1.03 SUBMITTALS PRIOR TO AWARD

- A. Prior to Contract award, Successful Bidder will be required to submit a certificate of insurance naming Owner and Owner's Representative as additional insured and waivers of subrogation against Owner and Owner's Representative, in accordance with the Contract. All certificates of insurance, as well as bonds, will be either executed by or countersigned by a licensed resident agent of the surety or insurance company having its place of business in the State of Illinois. Further, the said surety or insurance company will be duly licensed and qualified to do business in the State of Illinois.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- B. Prior to Contract award, the Contractor will be required to submit the following, but not limited to:
1. Completed certification of compliant drug policy.
 2. Proof of training and medical monitoring programs.
 3. Copies of Contractor's business licenses as required by state and local statutes.
 4. Transporter's valid U.S. DOT Number.
 5. Transporter's Certificate of Insurance.
 6. Intended disposal facilities required for liquid waste. Provide written evidence of a valid EPA CERCLA OSR approval (40 CFR 300.440); written evidence of a valid EPA/State Permit-to-Operate (40 CFR 264.11 and 265.11); and a summary of violations (formal and informal) and how they were resolved in the last 5 years.
 7. A schedule for completing the work should be submitted as part of the bid proposal and should be updated prior to Contract award, if necessary.

1.04 SUBMITTALS AFTER AWARD

- A. The Contractor will provide the following for review and approval by the Owner's Representative and/or Engineer, before the commencement of any Work onsite:
1. Contractor's site-specific health and safety plan and Activity Hazard Analysis (AHA).
 2. Safety Data Sheets (SDSs).
 3. Current hazardous waste site training and medical surveillance documentation for all field personnel, as necessary.
 4. Progress Schedule updates in accordance with Contract Agreement and 01 32 00, Construction Progress Documentation.
 5. Contractor Quality Control Plan.
 6. Work Plan. The Work Plan narrative will identify equipment, labor resources, crews and subcontracts. The narrative will also discuss project coordination, staging area plans as outlined in Section 01 50 00, Temporary Facilities and Controls and detail the means and methods to complete the work. Wetland delineation will also be included, as outlined in Section 02 24 00, Delineation of Wetlands and Other Waters of the State.
 7. Quality Assurance Project Plan (QAPP) for collecting and analyzing samples for an XRF correlation study. XRF screening will be used at the bottom of excavations where demarcation fabric is shown in design drawings and within garden areas. The EPA will select XRF screening levels based on the results of the correlation study. The QAPP must be

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- developed in accordance with EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); Guidance for Quality Assurance Project Plans., QA/G-5, EPA/240/R 02/009 (Dec. 2002); and Uniform Federal Policy for Quality Assurance Project Plans, Parts 1 3, EPA/505/B-04/900A though 900C (Mar. 2005).
8. Stormwater Pollution Prevention Plan (SWPPP), as described in Section 01 50 00, Temporary Facilities and Controls. Contractor will also provide proof of an Illinois qualified person (i.e., Professional Engineer, Certified Professional in Erosion and Sediment Control, Certified Erosion Sediment and Stormwater Inspector, or other knowledgeable person) who possess the skills to assess conditions at construction site that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The certification will be in accordance with the requirements of Illinois' General NPDES Permit and 40 Code of Federal Regulations Parts 121 and 122.
 9. Table describing borrow sources and a site drawing identifying the location(s) of borrow and specific borrow areas for each material type. The table will also summarize the available quantity of each material. Submitted within 5 days from Notice of Award. The Contractor will collect the samples at the source with the Owner's Representative. The Owner's Representative will submit the samples for chemical and gradation analysis. Owner will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.
 10. Transportation and Disposal Plan, as described in Section 01 50 00, Temporary Facilities and Controls and, including:
 - a. Pre-disposal: The Contractor will prepare all disposal paperwork, including waste profile forms, supporting analytical results, applicable pre-printed manifests, labels, and any other document required for transportation or off-site disposal. This information will be submitted to the Owner's Representative for review and subsequent provision to USEPA. The Generator of this waste is United States Environmental Protection Agency (USEPA) Region 5. Upon satisfactory completion of all documentation by the Contractor, the waste profile will be signed by USEPA. All waste manifests will be signed on site by the Owner's Representative on behalf of USEPA. Once the waste profile is signed, the Owner's Representative will provide the signed profile back to the Contractor for submittal to the disposal facility.
 11. Noise Control Plan, as described in Section 01 50 00, Temporary Facilities and Controls.

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12. Fugitive Dust Control Plan, as described in Section 01 50 00, Temporary Facilities and Controls.
 13. Air Monitoring Plan, as described in Section 01 50 00, Temporary Facilities and Controls.
- B. The Contractor will provide the following submittals during execution of the Work:
1. Daily reports (Contractor production report, Contractor quality control report, AHAs, and soil excavation/transportation log, waste disposal log [if necessary], weight tickets, haul tickets) during the field operations period. Daily reports will be submitted no later than 12:00 noon on the day following the work reported.
 2. Driver's vehicle registration and driver's license required for intrastate commerce in each state of operation.
 3. Summary of remedial actions completed at each property, including any deviations from the specified SOW.
 4. Weekly updated schedule of values showing cumulative amounts for the billing period and cumulative project to date are to be submitted no later than 9:00 A.M. on Tuesday for each week in which work is completed for the project.
 5. Weekly progress schedule update.
 6. Air monitoring results, as described in Section 01 50 00, Temporary Facilities and Controls.
 7. As-built redline drawings of all excavation areas with lateral and vertical limits of excavation.
 8. A table documenting information on wastes managed, including quantities generated at each location and disposition of wastes.
 9. Disposal: The Contractor will provide a copy of the approved profile or letter of approval for each waste stream. The Owner's Representative will coordinate with the Contractor for the transport and disposal of wastes, if necessary.
 10. Fully completed manifests or delivery tickets for all waste streams documenting ultimate off-site disposal, as necessary.
 - a. Manifesting: A manifest for each load of waste will be created before leaving the site. At a minimum, the manifest form will include the following information:
 - 1) Generator information, including name, address, contact, and phone number, and EPA ID number.
 - 2) Transporter information, including name and EPA ID number.
 - 3) Designated facility information, including name, address, phone number, and EPA ID number.
 - 4) Site name, including street and mailing address.
 - 5) DOT proper shipping name.

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- 6) Type and number of container.
 - 7) Quantity of waste (volumetric estimate).
 - 8) Task order or job number.
 - 9) Profile number.
 - 10) 24-hour emergency phone number.
 - b. Post-disposal: The Contractor will provide fully executed manifests (with transporter and facility signatures), weight tickets, and Certificates of Disposal/Destruction (CD) as applicable. Originals will be sent directly to the Owner's Representative via a means of traceable mail such as Federal Express or UPS or hand-delivered with a signature receipt. Original facility-signed manifests will not be attached to invoices. All original hazardous waste manifests must be returned to the Owner's Representative within 25 calendar days.
11. Additional action and informational submittals required by the technical specifications.

1.05 APPLICABLE REGULATIONS

- A. General: Work will comply with all Federal, State and local regulations, and with the latest edition of applicable sections of the following regulations, standards, and codes:
1. American National Standards Institute (ANSI).
 2. ASTM International (ASTM).
 3. Building Code of America.
 4. National Electric Code (NEC).
 5. National Electrical Manufacturer's Association (NEMA) Code.
 6. National Fire Protection Association (NFPA) Standards.
 7. Occupational Safety and Health Act.
 8. Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120.
 9. Underwriter's Laboratory (UL).
 10. Illinois Statutes, including:
 - a. Air Pollution Control Rules (IAC 35 Part 212);
 - b. Water Quality Resources – Part 302 (IAC 35 Part 302);
 - c. Part 309 National Pollution Discharge Elimination System (NPDES; IAC 35, 122.26(a)(14)(x));
 - d. Special Waste Rules (IAC 35 Part 808).
 11. Illinois Clean Fill Regulations (IAC Title 35, Part 1100)
 12. Illinois Department of Transportation (IDOT).

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13. United States Environmental Protection Agency (USEPA), including:
 - a. All regulations implementing the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986 and;
 - b. Regulations implementing the National Oil and Hazardous Substances Pollution Contingency Plan.
 - c. Section 404 of the Clean Water Act.
14. Other applicable state and local codes and regulations.
15. Other applicable Federal Applicable or Relevant and Appropriate Requirements including:
 - a. Endangered Species Act of 1973.
 - b. Migratory Bird Treaty Act.
 - c. Fish and Wildlife Conservation Act.
 - d. Executive Order on Protection of Wetlands.
16. Executive Order on Protection of Wetlands.
17. National Historic Preservation Act.

B. Regulatory Framework:

1. This Work is on and adjacent to a USEPA Superfund Site, is being conducted as part of the USEPA's Superfund Program and is governed by CERCLA law and guidance. CERCLA projects are generally exempt from requirements to obtain environmental permits for on-site work; however, compliance with all substantive requirements is required. Non-environmental permits and permits related to off-site activities must be obtained.
2. The Contractor is required to perform a wetland delineation and provide a jurisdictional determination per Section 02 24 00, Delineation of Wetlands and Other Waters of the United States, to determine whether regulated wetlands will be disturbed. A Wetland Delineation Report and Jurisdictional Determination Recommendation are required. If regulated wetlands will be disturbed, the Contractor is also required to prepare and submit a Substantive Requirements document describing compliance with USACE Nationwide Permit 38 and Regional Conditions will be a submittal.
3. The Contractor is to implement conservation measures to mitigate for impacts to Indiana bat and migratory birds as specified in Section 01 30 00 Site Preparation and 01 31 13, Supplement 2 Migratory Bird Protocol and Checklist.
4. If unidentified archaeological deposits are uncovered during excavation activities, protocol must be implanted as outlined in the Unanticipated Discovery Plan (UDP), per Section 31 23 16, Excavation.

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5. A SWPPP will be required for this Work. The Contractor will draft the SWPPP and coordinate with St. Clair County. The Contractor will provide information on best management practices for preventing stormwater discharge and will finalize the SWPPP.
6. The actions described in this SOW are not likely to result in any atmospheric discharges that would require either notification or permitting under the Clean Air Act (CAA). Under the CAA, temporary sources are not considered stationary sources and therefore are not regulated by the provision set forth in the act; however, any emission or escape into the open air can be declared a public nuisance. For compliance with Illinois Air Pollution Control Rules (IAC 35 Part 212, Subpart K), and to avoid the nuisance rule, the Contractor will complete sampling and monitoring per the approved Air Monitoring Plan, and will control fugitive emissions (e.g. dust) as described in Specification Section 01 50 00, Temporary Facilities and Controls.

1.06 HEALTH AND SAFETY

- A. A copy of the Owner's Representative's health and safety plan (HASP) can be supplied to the awarded Contractor for reference. The Contractor will provide its own Site-specific HASP for the performance of the Contractor's activities. The primary chemicals of concern for this project are arsenic, cadmium, lead, and zinc, which are contained within the soil that will be excavated during this project. The Contractor is responsible for the health and safety of its own personnel and any of its Subcontractors' personnel at the project site, and will provide, for all its own personnel and any of its Subcontractors' personnel, all health and safety equipment required to comply with the Contractor's Safety Procedures and that are necessary to complete the Work. Failure to comply with the appropriate health and safety procedures outlined in the Owner Representative's HASP and the Contractor's HASP, as determined by Owner's representative, will be considered grounds for a Stop Work Order. The Contractor will remedy failure of compliance, as directed and approved by the Owner's Representative, before resuming Work. The Contractor will not be paid for the time occurring after notice of Stop Work Order and before resuming Work and may be responsible for Owner Representative costs during the downtime.
- B. Responsibilities:
 1. The Contractor will designate one site employee as the "Designated Safety Coordinator" (DSC) who will interface with the Owner Representative Site Safety Coordinator (SSC) in matters of site safety.
 2. The Health and Safety Program has Three Objectives:
 - a. To protect personnel onsite;

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- b. To comply with applicable (federal, state, and local) health and safety regulations and;
- c. Minimize health and safety liabilities.
- 3. The Contractor will identify the contacts for utility coordination in the site-specific HASP.
- 4. All employees will follow, as a minimum, the requirements of OSHA 29 CFR 1910 and 29 CFR 1926.

C. Minimum Requirements:

- 1. Personal Protective Equipment:
 - a. General Requirements:
 - 1) Responsibilities (29 CFR 1910.132):
 - a) Contractor employees must use personal protective equipment (PPE) that maintains their exposure within acceptable limits as defined in the HASP.
 - b) Employers must ensure that employees receive training in and have knowledge of the use and maintenance of PPE that is to be used onsite.
 - 2) Contractor employees must be physically able and medically determined as qualified to use the PPE and safety equipment that may be required in their job duties.
 - 3) PPE and safety equipment will be tested, inspected, and maintained in serviceable and sanitary condition.
 - a) Defective equipment will not be used.
 - b) Records of any tests or inspection will be available for inspection by the Owner's Representative.
 - 4) For hazardous waste operations (if required), the Contractor will abide by 29 CFR 1910.120, Appendix B.
 - b. Minimum Requirements for Appropriate Personal Protective Equipment: As described in the Owner's Representative's Health and Safety Plan.
 - c. Minimum Requirements for Site Safety:
 - 1) Safety color code for marking physical hazards (29 CFR 1910.144) will include the following:
 - a) Caution tape will be at a minimum of 3 inches wide, yellow, and the words "CAUTION" spelled out legibly in black.
 - b) Safety cans or other portable containers of flammable liquids will be in compliance.
 - 2) All signs and tags will be in compliance with 29 CFR 1910.145.
 - 3) Fencing will be required around excavations 29 CFR 1926.501.

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2. Outline for the Contractor's Site-specific Health and Safety Plan:
 - a. Activity Hazard Analysis:
 - 1) All definable features of Work will be addressed with an activity hazard analysis (AHA) prior to beginning each activity. This chart looks at principal steps of the operation, potential safety/health hazards for each step, and recommended controls for each hazard. In addition, a listing of equipment to be used onsite, inspection requirements, and training requirements for operation of equipment will be included.
 - 2) Analyses will define the activities being performed, identify the sequences of Work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level.
 - 3) Work will not begin until the hazard analysis for each Work activity has been reviewed and accepted by the Owner's Representative.
 - b. Training requirements are as follows (29 CFR 1910.120.(e)):
 - 1) 40-hour hazardous waste training.
 - 2) 8-hour hazardous waste refresher training within the last 12 months.
 - 3) Site-specific training including names of personnel and alternates responsible for site safety and health; safety, health, and other hazards identified in the AHA; use of PPE; work practices to minimize risks from hazards; medical surveillance requirements and recognition of symptoms and signs which might indicate overexposure to hazards; and decontamination procedures.
 - c. Personal Protective Equipment: A specific list of PPE to be used by Contractor employees for each site task and operation plus the assigned level of protection and criteria for upgrading or downgrading a task will be included.
 - d. Medical Surveillance:
 - 1) As a minimum, list the requirements for annual and any site-specific physical requirements for contaminants of concern on the site.
 - 2) Provide name, route map, and contact number for emergency medical services available in case of a suspected exposure or emergency.
 - 3) Drug testing will be completed for the Contractor's and all subcontractors' onsite employees within 30 days prior to arrival onsite.

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- e. Site Control: Implement appropriate site controls to isolate areas with hazardous substances or physical hazards before Work begins. Establish Work zones, use of the “buddy” system, site communications including emergency signals, and identification of standard operating procedures.
- f. Decontamination:
 - 1) Written procedures will be developed and implemented before and during site activities based upon actual site conditions. Decontamination for hand tools, light equipment and personnel will be described in the Contractor’s AHAs. Decontamination for heavy equipment and trucks will be described in the Contractor’s Work Plan.
 - 2) All trucks or other equipment entering the exclusion zones at either the property excavations or the waste staging area must be decontaminated prior to exiting the exclusion zones. This includes, but is not limited to, trucks transporting contaminated soil from property excavation areas to the FA. The Contractor is responsible for conducting all truck decontamination and management of decontamination wastes.
 - 3) All trucks or other equipment leaving the FA with borrow source material must be decontaminated prior to leaving the FA to avoid tracking material from the FA into the surrounding properties.
 - 3) All equipment leaving the site will be decontaminated and decontamination wastes will be managed, contained and disposed of by the Contractor in a manner approved by the Owner’s Representative in the appropriate plans.
- g. Spill Control:
 - 1) Onsite spills: Requirements for spill containment procedures are described in the Owner’s Representative’s Health and Safety Plan; these will be followed when developing the Contractor’s procedures.
 - 2) Offsite spills: Describe procedures for containment of offsite spills in detail in the Transportation and Disposal Plan; a general description of these procedures will be described in the Contractor’s Health and Safety Plan.
 - 3) All personnel leaving the exclusion area will perform the required decontamination. The Contractor DSC will observe these operations and ensure proper decontamination procedures are being followed. These procedures will be followed every time personnel leave the site.
 - 4) PPE will be cleaned or disposed of in a method specified in the Contractor’s HASP.

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- h. Emergency response plan will include the following:
 - 1) Pre-emergency planning including designation of personnel roles, responsibilities, emergency recognition, safe places of refuge or gathering, evacuation routes, emergency decontamination procedures, alerting procedure, and availability of first aid and medical treatment.
 - 2) Site emergency equipment including first aid kits, 15-minute eyewash, 20-pound fire extinguishers, blood borne pathogen kit, emergency map, designated emergency vehicle, and listing of trained first aid and CPR personnel.
 - 3) Procedures for reporting incidents, emergency communications, and testing of the site emergency notification system.
 - 4) Post-emergency evaluation, an evaluation looking at how resources came into play, response of outside sources, and steps to improve the process.
 - i. Confined Space Entry, if required by Site Activities: This includes the specific procedure following 29 CFR 1910.146, including training, site isolation, permit procedures, air monitoring, and emergency rescue.
 - j. Spill Containment Program:
 - 1) Written spill containment program that is targeted at the quantities and types of material brought to the site by the Contractor or as a result of stockpiling or tankage of site materials.
 - 2) Spill control materials in adequate quantities to control solid or liquid spills.
 - 3) Drums or containers for recovery of spilled material or rapidly available local resources to provide these materials.
 - k. Activity Hazard Analyses:
 - 1) The Contractor will prepare AHAs to review the hazards posed and required hazard control procedures for activities planned during the Work.
 - 2) During the daily safety meeting, the Contractor's supervisor will brief their Work crew on the AHA, which will include the day's planned tasks, tools, equipment, and materials that will be used, along with hazards posed and required hazard control procedures for each day's planned activities.
3. References:
- a. OSHA 29 CFR 1910, General Industry Standards.
 - b. OSHA 29 CFR 1926, Construction Industry Standards.

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1.07 CONTRACT TIME

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- B. Substantial Completion:
 - 1. The Work is anticipated to be performed in 2019 and 2020.
 - 2. Substantial Completion for each property will occur after site restoration Work has been completed, including the Contractor maintenance period, and the Residential Post-Construction Meeting is conducted with the property owners, Owner's Representative, Subcontractor, and USEPA, if desired.
 - 3. Project Substantial Completion will occur when remediation and restoration is complete for all properties, include maintenance, watering and punch list work complete and property owners have signed off on work.

1.08 SITE WORK HOURS

- A. Residential Areas: Work can be performed in the residential areas from 7:00 AM – 6:00 PM Monday through Friday.
- B. Facility Area: Work can be performed at the FA from 6:00 a.m. – 6:00 p.m. Monday through Friday.
- C. Weekend work hours or other alternative work hours must be approved in writing by the Owner's Representative.
- D. Nothing in this Section will be construed as approval of overtime work hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Schedule of Values: Submit on form approved by Owner's Representative.
2. Schedule of Estimated Progress Payments:
 - a. Submit with initially acceptable Schedule of Values.
 - b. Submit adjustments thereto with Application for Payment.
3. Application for Payment.
4. Final Application for Payment.

1.02 SCHEDULE OF VALUES

A. On a weekly basis the Contractor will provide an updated Schedule of Values (SOV) as described in Section 01 11 00, Summary of Work.

1. The SOV will be reviewed weekly during each weekly progress meeting with the Owner's Representative. Based on the weekly review, the Contractor will provide any additional documentation needed to support the accuracy of the SOV. Based on the weekly review, the SOV will be revised if needed.
2. The Owner's Representative will determine time periods for reporting of quantities and values on the SOV.
3. The SOV will correspond to each definable feature of work (DFOW).

B. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

C. Lump Sum Work:

1. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, project coordination and contract closeout separately.
2. Provide adequate breakdown of lump sum work specified in sections "Summary of Work" and "Temporary Facilities and Controls," distributed for payment over the construction duration.

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- D. An unbalanced or front-end loaded compensation schedule will not be acceptable.
- E. Summation of the complete Schedule of Values representing all the Work must equal the Contract Price.

1.03 MEASUREMENT—GENERAL

- A. Whenever pay quantities of material are determined by weight, the weight or load slip will be obtained from weigher using properly certified scales and delivered to Owner's Representative as documentation.
- B. Vehicles used to haul material being paid for by weight will be weighed empty daily and at such additional times as required by Owner's Representative. Each vehicle will bear a plainly legible identification mark.
- C. Excavation quantity and transport to the FA will be based on load tickets. Quantities may also be based on surveys, if deemed necessary by the Owner's Representative. If surveys are performed, the survey method will be determined by the Owner's Representative.
- D. Quantities for backfilled materials, including general backfill, topsoil, select topsoil, and gravel, will be based on load tickets. Quantities may also be based on surveys, if directed by the Owner's Representative. If surveys are performed, the survey method will be determined by the Owner's Representative. Payment will not be made for rejected or unused materials.
- E. Quantities for materials disposed of offsite will be based on weight tickets of material transported from the site for offsite disposal.
 - 1. Scales for payment will be certified by the State of Illinois and be properly calibrated and maintained.
- F. Units of measure shown on Bid Form will be as follows, unless specified otherwise.

| Item | Method of Measurement |
|------|---|
| CY | Cubic Yard—Field Measure by survey within limits specified or shown |
| EA | Each—Field Count by Owner's Representative |
| HR | Miscellaneous Crew Hour or Standby Time —Billable only with prior written authorization from Owner's Representative |

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| <u>Item</u> | <u>Method of Measurement</u> |
|-------------|--|
| LS | Lump Sum |
| SF | Square Foot |
| TON | Ton—Weight Measure by Scale (2,000 pounds) |

1.04 PAYMENT

- A. Payment for all Lump Sum Work shown or specified in Contract Documents is included in the Contract Price. Payment will be based on a percentage complete basis for each line item of the accepted Schedule of Values.

1.05 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by Owner's Representative.
 6. Material remaining on hand after completion of Work.
 7. Miscellaneous Crew or Standby time not approved in writing and in advance by the Owner's Representative.

1.06 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Owner's Representative.
- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, will revert to Owner's Representative unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

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1.07 **STANDBY TIME**

- A. Standby Time includes all necessary costs including, but not limited to taxes, labor, equipment and materials incurred when the crew is unable to perform work for a portion of a work day exceeding 30 minutes. Standby time will only apply after the time that Owner's Representative has indicated that a property is ready for the appropriate phase of work and activities at the property under the direction of Owner's Representative prevent the Contractor from performing the work, and no other work is possible for the Contractor's crew.
- B. Authorized only with prior written approval from Owner's Representative.
- C. Paid only at the approved fixed unit rate per hour on the Compensation Schedule.

1.08 **MISCELLANEOUS CREW SUPPORT**

- A. Miscellaneous crew support includes taxes, labor, and equipment to perform minor work at a property at the direction of Owner's Representative.
- B. Miscellaneous crew support is applicable to tasks where the Contractor has completed the Work to within Contract Requirements and additional miscellaneous work is required to meet an Owner-approved request that is not within the scope of any other contract line item on the Compensation Schedule.
- C. Authorized only with prior written approval from Owner's Representative.
- D. Paid only at the approved fixed unit rate per hour on the Compensation Schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 13
PROJECT COORDINATION

PART 1 GENERAL

1.01 GENERAL

- A. Property Owner Meetings: The Owner's Representative and Contractor will attend meetings with the property owner as described below and in Section 01 31 19, Project Meetings. Property maps developed by the Engineer using information gathered from the remedial investigation, supplemental remedial investigation, and predesign sampling, will be updated by the Contractor based on a survey of each property (if deemed necessary by Owner's Representative) and an initial property assessment meeting with the Property Owner.
 - 1. Initial Preconstruction Meeting will be used to document the existing conditions at the property. The Contractor will determine the means and methods to implement the work and identify modifications to the design plan. A qualified representative (Contractor representative or landscaper retained by the Contractor) will attend the meeting and prepare a tree and plant inventory to identify the existing vegetation that is designated for removal.
 - 2. Second Preconstruction Meeting will be used to document Property Owner approval of the work to be performed at the property.
 - 3. Post-construction Meeting will be held with the Property Owner to document issues identified during the performance of work, outstanding punch list items and substantial completion at the property.
- B. Land surveying may be used to document the grade prior to, during, and after construction, if deemed necessary by the Owner's Representative. The surveying method will be determined by the Owner's Representative.
- C. Utility Locates:
 - 1. The Contractor is responsible for locating utilities throughout the work area. The Contractor will perform utility locates for each property through the local one-call system (JULIE) where intrusive activities will occur. JULIE does not mark non-utility owned or privately-installed lines, such as water and sewer lines from the street to the house, or electric and telephone lines from the house to a garage or shed. A 3rd party utility locate subcontractor may also be used where intrusive activities will occur, if deemed necessary by the Owner's Representative.

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2. Utility locates will be completed prior to start of intrusive activities as specified in 31 10 00, Site Preparation, 31 23 16, Excavation, and 32 93 00, Plants.

1.02 SUBMITTALS

A. Informational:

1. Utility locate tickets:
 - a. Documentation of completed utility locates.
 - b. Submit one copy to Owner's Representative, within 2 work days prior to beginning any intrusive activities.
2. Revised property drawings showing underground utilities. Drawing revisions will be in an electronic format approved by the Owner's Representative.

B. Action:

1. Preconstruction Package summarizing information from the Initial Preconstruction Meeting, including the following:
 - a. Revised property drawing.
 - b. Meeting notes and property owner request.
 - c. Plant inventory identifying landscaping in the work area and how each item will be managed (left in place and protected, removed and replaced, removed and not replaced).
 - d. Property inventory identifying property owner personal property that will be disposed of or temporarily stored during work.
 - e. Submitted in Adobe Acrobat 9.0 or compatible version.
 - f. CD/DVD with photographs and/or video taken during the Initial Preconstruction Meeting.
 - g. Submitted within five (5) work days after the Initial Preconstruction Meeting.
2. Red-Line Drawings showing deviations from the property drawing approved by the Owner's Representative, Contractor, and Property Owner in the Second Preconstruction Meeting. Changes will be clouded and dated to reflect and record actual changes made during construction including modifications to the excavation extents, including landscaped areas, easements, or other areas, changes in tree, shrub, perennial removal, fill encountered during excavation or other similar factors that alter the lateral or vertical excavation extents. Legibly and clearly describe change by graphic line and note as required:
 - a. Green when showing information deleted from Drawings.
 - b. Red when showing information added to Drawings.
 - c. Blue and circled in blue to show notes.

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3. If surveying is performed, points files with Point Number, Northing, Easting, Elevation and Point Description for all surveys in format to be specified by Owner's Representative.
4. Preconstruction package.

1.03 UTILITY NOTIFICATION AND COORDINATION

- A. The Contractor will coordinate utility clearance through JULIE. The Contractor will verify that utilities have been identified and marked prior to beginning intrusive activities on each property and protect the utilities from damage during construction and restoration.
- B. The Contractor will notify applicable utilities prior to commencing Work and if damage occurs, or if conflicts or emergencies arise during Work.
- C. Property Owners and Tenants will be asked about the presence and location of personal utilities and plastic lines during the Initial Preconstruction Meeting. The Contractor will use alternate soft techniques to confirm personal utility locations.

1.04 PROPERTY ACCESS AND SERVICES

- A. The Owner's Representative will obtain property owner-signed access agreements and verify current property ownership.
- B. Do not proceed with Work at a property prior to obtaining Property Owner's and Property Owner's approval of the SOW, conditions, and duration of such work in the Second Preconstruction Meeting.
- C. During construction, it is expected that relocation of objects, materials, and trash will be necessary. Interfering objects that will require removal, storage, or disposal will be identified and documented in the preconstruction meeting with the Property Owner, Owner's Representative, Contractor, and Tenant, as appropriate. Objects identified for storage will be returned to the property and reinstalled by the Contractor during restoration.
- D. Two points of continuous access for Property Owners and Tenants will be maintained when possible, with one point of continuous access at all times. Schedule and conduct activities to enable access and egress to homes by Property Owner and Tenants.
- E. Openings in fences, created by the Contractor for construction access or other purposes, will be secured at the end of each work day.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- F. Perform Work continuously and as required to prevent interruption of services to residential homes and/or businesses (U.S. Postal deliveries, visitors, and others).
- G. Plan and coordinate Work in and around the street and alleys to allow City or Village services such as street cleaning and garbage pickup.
- H. Coordinate street parking for excavation and backfill equipment.
- I. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems without authorization from local utility companies and Owner's Representative.
- J. When necessary, provide various temporary services, utilities, connections, access, and similar items to maintain continuous operations for Property Owners and Tenant.

1.05 RESIDENTIAL PRECONSTRUCTION MEETINGS

- A. Residential Preconstruction Meeting: The Owner's Representative, Contractor, and any required Subcontractors, will attend Initial Preconstruction Meetings with the Property Owner and Tenant, as appropriate, onsite at the property where Work will be performed. During the meetings, information will be gathered to clearly define the limits of excavation and schedule.
 - 1. During the initial meeting, the Contractor will take video records and/or photographs of the physical site, structures, fencing, poles, trees, shrubs, concrete sidewalks and slabs showing their condition prior to start of the Work.
 - 2. Notations will be made by hand on the property drawing during the initial meeting and will include additional notes, concerns and understandings discussed with the Property Owner.
 - 3. A plant inventory will be completed by a qualified Contractor representative or Subcontractor representative documenting the trees, shrubs and perennials present in the yard areas where work will be performed. If the plant inventory cannot be completed at the initial meeting due to dormancy or similar issue, this will be conducted at an independent property visit by the Contractor or Subcontractor without the Property Owner.
 - a. XRF screening will be performed within landscaped areas to identify if shrubs and perennials require removal. The XRF screening criteria will be determined by the Owner.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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4. If significant changes to the design (significance of a change will be determined by the Owner's Representative) are discussed during the Initial Preconstruction Meeting, the proposed changes will be documented by the Owner's Representative and submitted to the Owner for approval. Once Owner has provided approval, Contractor will proceed with incorporation of changes.
5. The Contractor will incorporate the hand notations on the drawing from the initial meeting into an electronic format. The Contractor will compile a preconstruction package consisting of the finalized drawing, notes, inventories and a CD/DVD with photographs and/or video taken during the Initial Preconstruction Meeting.
6. The Contractor will use information gathered during the initial meeting to determine the means and methods to implement the required work at the property.
7. The Owner's Representative, Contractor, and Property Owner will review the finalized drawing, notes, and inventories for the property, and sign the Property Owner Agreement during a Second Preconstruction Meeting indicating concurrence and approval to proceed.

B. Examination:

1. Complete a thorough examination of pre-existing conditions including existing buildings, structures, fences and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations or limit access for equipment. Request Property Owner or Tenant demonstrate function of existing facilities that could be damaged by operations.
2. Schedule of Work.
3. Access.
4. Removals.
5. Restoration.
6. Security.
7. Other Conditions.

C. Documentation:

1. Owner's Representative will complete the Preconstruction Property Assessment Checklist.
2. Property Owner Agreement describes the property and Work to be performed and will be signed by the Property Owner, Owner's Representative, and Contractor.
3. A drawing, to scale, of site features and extents of excavation for each property will be provided by the Engineer or Owner's Representative at the time of contract award.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

4. After the Initial Preconstruction Meeting, the Contractor will be required to revise and submit the Property Drawing for approval, which at a minimum, will include the following information:
 - a. Site features.
 - b. Excavation area(s) and proposed access to the area(s).
 - c. Location of utilities and other site hazards.
 - d. Proposed fence removal (length and type).
 - e. Tree, shrub, perennial, garden and/or other vegetation removal or protection.
 - f. Restoration and Replacement Notes.
 - g. Each drawing will be reviewed and approved by the Owner's Representative and/or Engineer prior to authorization for beginning Work at the individual property.
5. Documentation (e.g., photographs, videos, drawings) will be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of Property Owners, adjacent property owners, Contractor, Engineer, Subcontractor, Owner and Owner's Representative.

1.06 REFERENCE POINTS AND SURVEYS

- A. If surveys are performed, the horizontal excavation extents will be within 0.0 to +0.2 of the excavation extent field markings as approved during the Initial Preconstruction Meeting.
- B. Subcontractor's Responsibilities:
 1. Provide competent employee(s), tools, stakes, and other equipment and materials required to:
 - a. Provide survey and measurements required to determine excavation and backfilling activities have been completed.
 - b. Maintain complete accurate log of survey as it progresses.
 - c. Provide survey and measurements required to document positive drainage following site restoration.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUPPLEMENT

- A. The supplements listed below, following "End of Section," are part of this Specification.
 1. Supplement 1, Preconstruction Property Assessment Checklist.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

2. Supplement 2, Migratory Bird Field Assessment Checklist and Nest Clearing Protocol.
3. Supplement 3, Property Owner Agreement.
4. Supplement 4, Old American Zinc Surrounding Properties Substantial Completion.

END OF SECTION

Preconstruction Property Assessment Checklist

| | | | |
|------------------------------|-------|------------------|-------|
| Property Address | _____ | Date / Time | _____ |
| Property Owner(s) Present | _____ | Owner's Rep | _____ |
| | _____ | Contractor | _____ |
| Tenant(s) Present | _____ | Subcontractor(s) | _____ |
| | _____ | | _____ |
| USEPA | _____ | | _____ |
| | _____ | | _____ |
| Other Attendees | _____ | | _____ |

Property Information

1. Type of Property ☐ Residential—Single Family ☐ Residential—Multi-Family ☐ Vacant Lot
2. Owner Occupied ☐ Yes ☐ No
3. Rental Property ☐ Yes ☐ No
 - a. If Yes, are there currently any Tenants Renting at Property ☐ Yes ☐ No
 - b. If Yes, has the Tenant been notified of the cleanup ☐ Yes ☐ No
4. Areas Requiring Remediation: ☐ Easement ☐ Front Yard ☐ Back Yard ☐ Side Yard
 ☐ Section A ☐ Section B ☐ Section C ☐ Section D
 ☐ FY1 ☐ BY1 ☐ FY2 ☐ BY2
 ☐ Other Yard Area (specify: _____)
5. Does the property owner have any knowledge of any drainage problems on the property (i.e. ponding water during rain, surface water runoff onto property, surface water runoff flooding neighboring property, water in basement)? ☐ Yes ☐ No
Location _____ Description _____
Location _____ Description _____
Location _____ Description _____
6. Will the property owner allow us to inspect and take photos of the basement for structural or drainage issues? ☐ Yes ☐ No
7. Is there a dog at the property? ☐ Yes ☐ No
 - a. Arrangements should be made for the dog to remain indoors during the work at the property.
 - b. The dog should be kept out of the area after it is restored for approximately 4 weeks to allow the grass to establish.

8. Property Owner/Tenant Special Requests:

Landscaping

1. Areas requiring landscaping after remediation is complete:

- ☐ Easement ☐ Front Yard ☐ Back Yard ☐ Side Yard
☐ Section A ☐ Section B ☐ Section C ☐ Section D
☐ FY1 ☐ BY1 ☐ FY2 ☐ BY2
☐ Other Yard Area (specify: _____)

2. Are there plants to be removed within the excavation area(s)? ☐ Yes ☐ No

- a. If Yes, perform XRF screening within the landscaped area to determine if plant removal will be performed. If plant removal is necessary, identify areas with plants on property sketch for landscaper to inventory. Notify landscaper to complete inventory prior to 2nd Preconstruction Meeting.

3. Are there plants that the property owner will transplant?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

4. Are there plants present in the excavation that will be removed and replaced?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

5. Are there perennials present in the excavation area that are not in bloom? ☐ Yes ☐ No

6. Are there plants in the excavation area that will be removed and not replaced?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

7. Are there plants that will remain within the excavation area?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

8. Does the property include any wetlands?

☐Yes

☐No

If yes, will the wetlands be excavated or disturbed in any way?

☐Yes

☐No

If yes, will the wetlands require restoration?

☐Yes

☐No

Is survey needed to confirm special habitat or wetlands boundaries?

☐Yes

☐No

9. Has the property been identified for special cultural resources considerations?

☐Yes

☐No

10. Describe special landscaping features (mulch, borders, or other):

Additional Landscaping Comments

General

1. Is the property owner able to confirm the property boundaries?

☐Yes

☐No

2. Is a Surveyor needed to locate property boundaries?

☐Yes

☐No

Comments

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

Yard Area: _____

1. Require remediation? ☐ Yes ☐ No
2. Will be used to access other areas requiring remediation? ☐ Yes ☐ No ☐ N/A
3. Yard Area Permanent Structures ☐ Driveway ☐ Sidewalks ☐ Concrete Slabs ☐ Patio
☐ Pavers/Brick ☐ A/C Unit ☐ Other _____
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐ Pavers/Bricks
☐ Landscaping Borders ☐ Other _____
Other / Comments: _____
5. Structures Present ☐ Residence ☐ Garage ☐ Dog House/Kennel ☐ Prefabricated storage shed
☐ Constructed storage shed ☐ Deck ☐ Stairs ☐ Other _____
Comments: _____
6. Alley Access ☐ Yes ☐ No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐ Yes ☐ No
☐ Fence ☐ Playsets ☐ Stairs (number) _____ ☐ Up ☐ Down ☐ Landscaping
☐ Retaining Wall Material _____ Height _____ ☐ Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐ Chain Link ☐ Wood ☐ Wrought iron ☐ Other _____
☐ Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐ Yes ☐ Property ☐ Neighboring ☐ No
10. Property boundary markers observed
☐ Fence ☐ Structure ☐ Survey marker ☐ Landscaping ☐ Pavement
☐ Ground covers ☐ Owner's knowledge
11. Overhead utilities or obstructions? ☐ Yes (show on sketch) ☐ No
☐ Electrical ☐ Telephone ☐ Cable ☐ Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐ Yes (show on sketch) ☐ No
☐ Gas ☐ Electrical ☐ Water ☐ Sewer ☐ Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, cisterns, wells, former pets, etc.) ☐ Yes (show on sketch) ☐ No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other _____
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks
☐Landscaping Borders ☐Other _____
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other _____
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks
☐Landscaping Borders ☐Other _____
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks ☐Landscaping Borders ☐Other
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

Property Inventory

Address _____ Date _____

[illegible]

Perennial/Shrub/Tree Inventory

Address _____ Date _____ Page ____ of ____

[illegible]

Note: Mark locations on a map for reference.

Photo Log

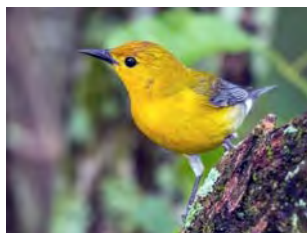
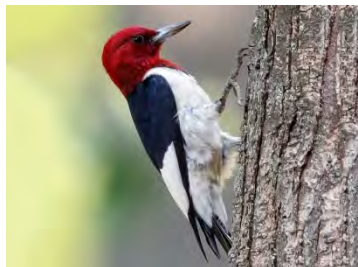
Address _____ Date _____

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Construction Environmental Checklist

Pre-Work Migratory Bird Field Assessment

Old American Zinc



Date of Assessment:

Site:

***It is illegal to violate the Migratory Bird Treaty Act,
which is fully prosecutable with civil and criminal penalties.***

| | | |
|--|--|--|
| Name of Person Conducting Assessment: | Company Name: | Time of Assessment: |
| Section of Property Being Assessed: | Area Marked on Figure? YES No | Planned Construction Activity: |
| Description of Vegetation Present: | Is vegetation to be removed? Yes or No | Is vegetation marked on construction documents? Y/N |

The following checklist is to help the project protect migratory birds by surveying the area prior to beginning any construction, land clearing or vegetation removal work between **April 1 to September 10** of each year for most species and varies by location (note bald eagles may nest year-round). Walk all areas prior to land disturbing activities, to identify whether any birds flush from the ground or trees when approached. If a bird flushes, look for a nest in that vicinity.

| Live Species Observed? | | # of Individuals Observed | Is it breeding here? | | Behavior Observed | Habitat and Notes |
|------------------------|----|---------------------------|----------------------|----|-------------------|-------------------|
| Yes | No | | Yes | No | | |
| | | | | | | |
| | | | | | | |

If a nest is present and not active (i.e., no eggs, no chicks, no adult birds, etc.), the nest may be removed as long as it will not result in the accidental death or injuring of a migratory bird or eggs. Nest removal helps to prevent migratory birds from nesting or returning to the area.

| Nests Present? | | Nest Location | | | | | Is Nest Active? | | If No, has Nest been Removed? | |
|----------------|----|---------------|-------|--------|--------------|-----------------|-----------------|----|-------------------------------|----|
| Yes | No | Tree | Shrub | Ground | Utility Pole | Other (specify) | Yes | No | Yes | No |
| | | | | | | | | | | |
| | | | | | | | | | | |

If an active nest is present, the nest must be protected until the chicks fledge the nest (duration is dependent upon the species) ***If found on-site, do not approach or harass the bird. Immediately call the Owner's Representative and establish a no-entry zone around the bird nest.***

Circle all the Protection Measures Implemented

| | | |
|------------------------------|-------------------------------------|---------------------------|
| Work Activity Delayed | Area Marked and Roped Off | Fencing/Barrier installed |
| Vegetative Buffer Maintained | Field Disturbance in Area Minimized | Buffer Zone Established |

Additional measures or actions taken: _____

Comments/Findings: _____

If active bird nests are in or near the construction site, the following specific situations are those most likely to be encountered during construction

- **Blown-down nest (after storm events):** if the nest is relatively undamaged and the young birds or eggs are unharmed, replace the nest into the tree/shrub from which it fell or in a nearby tree/shrub. The parents should continue to attend to the nest. A badly damaged nest may be replaced into a strawberry basket or other appropriately sized basket before placement in a tree/shrub. Note: it is a common fallacy that birds reject their young if they have acquired a human scent. However, excessive handling should be avoided none-the-less.
- **Grounded Baby Birds:** Frequently, birds seen hopping on the ground begging for food do not require your assistance. It is common for birds to fledge from the nest before they are fully feathered or flight-ready. They will be fed on the ground for a day or two until they are able to fly, and then may fly with a parent until able to forage on their own. Usually, if the grounded bird is a healthy fledgling, you will see the parent attending it or foraging nearby. Careful observation should help you make a correct determination. If the bird is in the road, place it under a nearby bush. Never unnecessarily handle or move the fledgling from the area where it was found. Baby blue jays are slow to mature, so the fledgling stage will generally take longer for them.

If the bird is tiny and not feathered, it is likely a 'nestling' that has fallen from its nest. If you can find the nest, put the nestling in the nest and avoid the area. If you cannot find the nest, line a small box with tissue and suspend from a branch or put it on the ground near where its nest is believed to be located and avoid the area.

If injured wildlife or bird is found, call the Owner's Representative. Also call the West-Central Region 4 Illinois Department of Natural Resources District Wildlife Biologist Carl Handel (618) 295-2877. For all bird injuries or deaths during construction, contact the USFWS Marion field office at 618-997-3344, ext. 345.

Draw a figure to identify area assessed and location of Any Active Nests

Old American Zinc Superfund Site Nest Clearing Protocol

The specifications will require that the construction manager retain a biologist with competency in migratory bird identification if trees or shrubs are being removed between April 1 and September 10. The following protocol and checklist will be in the project specifications:

Shrubs/Small Trees to be Removed by Excavator:

1. Approach and note if any birds leave the shrub/tree.
2. Examine the shrub/tree to determine if there are any nests present on branches or ground.
3. If a nest is present and has eggs or live young birds in it, take a photo without disturbing the nest, and call the Owner's Representative who will consult with a biologist. Do not remove the nest or birds until directed by appropriate Owner Representative's supervision.
4. If no nest is present or one is present and no eggs or live birds are in it then proceed to remove the shrub/tree.

Large Tree to be Removed by Cutting:

1. Approach and note if any birds leave the tree.
2. Move into first position for cutting and determine if there are any nests or cavities present .
3. If a nest or cavity is present, listen to determine if any live birds can be detected.
4. Take a picture of the nest and send it with any related field notes to the Project construction manager. Then attempt to visually determine if live mature or young birds or eggs are present. Use the nest guide to determine the type of bird.
5. Call the Owner's Representative. Do not remove the nest, eggs, or birds until directed by appropriate Owner Representative's supervision.
6. If no nest or cavity is present or if no live birds are present then proceed to trim in that area as prescribed.

Move to the next cutting position and repeat the steps.

If ANY nests with live unfledged birds are identified during cutting or vegetation removal, stop work at that area and call the Owner's Representative. Work may proceed in other areas that have no eggs or live unfledged birds present.

Property Owner Agreement

Property Owner(s): _____

Address: _____

Date of Meeting: _____ Time of Meeting: _____

Initial Residential Preconstruction Documentation provided to Property Owner, including:

Photo CD or Prints and Photo Log

Initials Confirming Receipt _____

Property Inventory Log

Initials Confirming Receipt _____

Plant Inventory Log

Initials Confirming Receipt _____

Revised Construction Drawing

Initials Confirming Receipt _____

Estimated Duration for Construction: _____ Calendar Days (weather dependent)

Description of Property Access during Construction _____

Restoration Activities Planned: _____

Contractor will excavate the following areas as shown on the final site drawing:

☐ Easement

☐ Front Yard

☐ Back Yard

☐ Side Yard

☐ Section A

☐ Section B

☐ Section C

☐ Section D

☐ FY1

☐ BY1

☐ FY2

☐ BY2

☐ Other Yard (specify: _____)

Description of Other Areas _____

List of buried items identified on the property.

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Property Substantial Completion Form

Address: _____

Construction Start Date: _____ Construction and Restoration Completion Date: _____

Contractor Has Excavated and Restored the Following Areas:

☐ _____ – Depth _____ ft. ☐ _____ – Depth _____ ft.

☐ _____ – Depth _____ ft. ☐ _____ – Depth _____ ft.

Description of Other Yard Remediated _____

1. Did any damage occur to trees/plants that were not removed from yards? ☐ Yes ☐ No

Location _____ Description/Damage _____

Agreed To Resolution _____

2. Any items resident wanted removed from yards and disposed still present? ☐ Yes ☐ No

Location _____ Description _____

Agreed To Resolution _____

3. Were the items moved prior to construction returned to the proper location? ☐ Yes ☐ No

Location _____ Description _____

Agreed To Resolution _____

4. Were unknown buried items uncovered during the excavation? ☐ Yes ☐ No

Location _____ Description _____

What Was Done: _____

5. Have grasses, trees, shrubs, perennials, wetlands or special habitat been replaced as approved?
☐ Yes ☐ No

List Any Missing Plants:

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Agreed To Resolution _____

List Any Missing Wetlands Restoration Aspects (if applicable):

Location _____ Description _____

Location _____ Description _____

6. Does the resident report damage to the property from construction? ☐ Yes ☐ No

List all damage, including any already repaired:

Location _____ Description _____

Was the damage shown on the Preconstruction Photographs or Video? ☐ Yes ☐ No

Relevant Documentation: _____

Agreed To Resolution _____

7. Are there other unresolved issues? ☐ Yes ☐ No

List Any Unresolved Issues

Location _____ Description _____

Agreed To Resolution _____

8. Date for the completion of the 6-week landscape watering: _____

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9. Were there changes from the agreed preconstruction plan for the property? ☐ Yes ☐ No
- 9a. If yes, were the changes at the direction of the property owner? ☐ Yes ☐ No
- 9b. Provide a description of the changes (e.g., final grade modified):

Location _____ Description _____

The USEPA and their Representatives make no warranties or representations of the work for any property owner initiated design changes. Property owner also assumes all liability associated with property owner initiated field design changes of the work.

10. Date for resolution of all outstanding issues: _____

Agreement with the Property Owner That Construction Is Substantially Complete:

Construction and restoration activities associated with the Old American Zinc Superfund Site, Surrounding Properties, Remedial Action have been completed as agreed during the preconstruction meetings and as described above. The property owner hereby assumes responsibility for maintenance watering and care for the landscaping, including trees, shrubs, perennials, and grass.

Signatures:

| | | |
|---------------|---------------------------------|---------------------|
| _____ Date | _____ Property Owner | _____ Print Name |
| _____ Date | _____ Contractor | _____ Print Name |
| _____ Date | _____ Owner's Representative | _____ Print Name |

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 GENERAL

- A. Contractor will schedule physical arrangements for meetings throughout progress of the Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions. The meetings include, but are not limited to, the following:
1. Pre-construction conference.
 2. Scheduling meetings.
 3. Residential pre-construction meetings.
 4. Residential property preparatory phase meeting.
 5. Residential post-construction meetings.
 6. Daily tailgate meetings.
 7. Weekly progress meetings.
 8. Final post-construction meeting.
 9. Other meetings that may be determined necessary during the work.

1.02 PRECONSTRUCTION CONFERENCE

- A. Contractor will attend a one-time mandatory preconstruction conference, which will be held in St. Clair County, Illinois, prior to mobilization. The exact date and time will be determined after Contract Award. A health and safety charter will be performed with the Owner's Representative, Contractor, and Subcontractor staff. Contractor will be prepared to discuss the following subjects, as a minimum:
1. Required schedules.
 2. Status of Bonds and insurance.
 3. Sequencing of critical path work items.
 4. Progress payment procedures.
 5. Project changes and clarification procedures.
 6. Use of Site, access, office and storage areas, security and temporary facilities.
 7. Major product delivery and priorities.
 8. Contractor's safety plan and representative.

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9. Status of permits, license or required approvals.
10. Status of submittals.
11. Maintaining required records.
12. Activity Hazard Analyses.
13. Contractor Key Personnel Information and Points of Contact for 24 hours per day, 7 days per week.
14. Contractor Quality Control Plan.

B. Attendees will include:

1. EPA's representatives.
2. Owner's Representative(s).
3. Contractor's project manager.
4. Contractor's office representative.
5. Contractor's resident onsite superintendent.
6. Contractor's onsite quality control representative.
7. Contractor's onsite health and safety representative.
8. Contractors' representatives whom Owner's Representative may desire or request to attend.
9. Others as appropriate.

1.03 PRELIMINARY SCHEDULES REVIEW MEETING

- A. As set forth in General Conditions and Section 01 32 00, Construction Progress Documentation. A preliminary schedule review meeting will be conducted at the time of the Preconstruction Conference.

1.04 RESIDENTIAL PRECONSTRUCTION MEETINGS

- A. An initial Residential Preconstruction meeting will be conducted with the Property Owners several weeks before mobilization at the property to discuss schedule, access, remediation, removals, restoration, and security. During the preconstruction meeting, a copy of the construction drawings will be provided. The Owner's Representative will coordinate and lead the meetings with the Property Owners, Contractor, and if necessary, the Tenants. Meetings may be scheduled outside of normal working hours and on weekends to accommodate the Property Owners' schedules. All parties will be required at all meetings until details are concluded. Details will include video/photo documentation of preconstruction conditions, identification of Property Owner-installed or Resident-installed facilities that could be impacted by remedial activities, and mark-up of construction drawings for current property features as indicated in Section 01 31 13, Project Coordination.

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- B. A second Preconstruction Meeting will be performed within approximately 1 week of mobilization to the property. The Owner's Representative and Contractor will meet with the Property Owner and Tenant, if necessary, at the property to confirm the drawing made during the initial Preconstruction Meeting. The plants and property inventories will also be confirmed and the current Property Owner will be given a copy. At the conclusion of the second Residential Preconstruction Meeting, the Property Owner, the Owner's Representative, and Contractor, will all sign the Property Owner Agreement authorizing the Work to be performed at that property.

1.05 RESIDENTIAL PROPERTY PREPARATORY PHASE MEETING

- A. Residential Property Preparatory Phase meetings will be held to review the property-specific plan including, but not limited to, yard areas where work is to be performed, excavation depths, utility locations, access points, landscape features to remain or be removed, owner requests, and other property features. The meeting will include a review of the property drawing, utility drawings, preconstruction meeting documentation and the physical property.
- B. Each Contractor crew will participate in an orientation prior to beginning intrusive work at each property.

1.06 DAILY TAILGATE MEETINGS

- A. Daily tailgate meetings will be conducted with the Owner's Representative every workday morning at 7 a.m. Central Time Zone (CT) unless alternate time is approved by the Owner's Representative. Generally, attendees for this meeting will include all Contractor and subcontractor personnel who will be onsite working that day. Documentation of the meeting will be provided to Owner's Representative by 10 a.m. CT that same day.
- B. Daily tailgate meetings will discuss the following subjects, as a minimum:
 - 1. The work planned for the day.
 - 2. Changes in work assignment.
 - 3. Health and safety issues.
 - 4. Quality issues.
 - 5. Review problems encountered the previous day.
 - 6. Review and sign the AHAs prior to beginning any work onsite.

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1.07 WEEKLY PROGRESS MEETINGS

- A. Contractor will attend regular progress meetings at the site, conducted weekly to review construction progress (previous week and upcoming week activities), progress schedule, sample collection and submissions schedule, schedule of values, contract modifications, and other matters that require discussion and resolution. Minimum required submittals for this meeting will be the weekly progress schedule update and weekly Schedule of Values update which are detailed in specification section 01 11 00, Summary of Work.

1.08 RESIDENTIAL POST-CONSTRUCTION MEETING

- A. Residential Post-Construction meetings will be conducted with Property Owners and if necessary, the Tenants following completion of restoration to review acceptability of completed Work and to develop punch list items as required. During the meeting, a copy of the edited construction drawings will be reviewed showing information gathered during the Residential Preconstruction Meetings. The Owner's Representative will coordinate and lead the meetings with the Property Owner and Contractor in attendance at the property address. Meetings may be scheduled outside of normal Working hours and on weekends to accommodate the Property Owner and Tenant's schedule.
- B. The Contractor will correct the items on each punch list within 7 work days of receipt of the punch list. After the completion of the punch list items, the Owner and/or the Owner's Representative will meet with the Property Owner to perform a final inspection. The restored Work will be documented by the Owner's Representative using photographs and video. Upon acceptance of the Work, all parties will provide their signature to the Property Owner Agreement signing off that the work is complete.

1.09 PROJECT POST-CONSTRUCTION MEETING

- A. Contractor will attend a mandatory project post-construction meeting for the project, which will be scheduled after completion of field activities but prior to Contractor demobilization. The purpose of this final inspection/meeting is to close out any punch list items, discuss schedule for demobilization, and discuss delivery of all required deliverables.

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1.10 OTHER MEETINGS

- A. In accordance with Contract Documents and as may be required by Owner and Owner's Representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Preliminary Progress Schedule: A Preliminary Project Schedule will be submitted with the Contractor's proposal.
2. Detailed Progress Schedule:
 - a. Submit initial Detailed Progress Schedule within 5 calendar days after Contract award.
 - b. Submit an Updated Progress Schedule at each weekly update, in accordance with Section 01 11 00, Summary of Work.
3. Submit with Each Progress Schedule Submission:
 - a. Contractor's certification that Progress Schedule submission is actual schedule being used for execution of the Work.
 - a. Electronic file compatible with Microsoft Office Project 2013, unless otherwise approved by Owner's Representative and/or Engineer.
 - b. Progress Schedule
 - c. Narrative Progress Report
4. Prior to final payment, submit a final Updated Progress Schedule.

1.02 SCHEDULE COORDINATION

- A.** The construction and restoration schedules will be reviewed during the weekly progress meetings.

1.03 PRELIMINARY PROGRESS SCHEDULE

- A.** The schedule will show major Work activities, beginning with Notice of Award. The major Work activities will include project coordination, mobilization, remediation at each property, restoration at each property, and other activities through Final Completion.
- B.** Show activities including, but not limited to the following:
1. Notice of Award.
 2. Permits.
 3. Preconstruction Conference.
 4. Project Mobilization Activities.

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5. Residential Preconstruction Meetings.
 6. Specified Work Sequences and Construction Constraints.
 7. Plant and seed watering activities.
 8. Contract Milestone and Completion Dates.
 9. Residential Post-construction Meetings.
 10. Project Close-out Summary.
 11. Demobilization Summary.
- C. The Preliminary Progress Schedule will show Work approach, sequences and constraints. This schedule data will be used by the Contractor in preparation of the Detailed Progress Schedule.
- D. Format: In accordance with Article Progress Schedule—Critical Path Network, or alternative format approved by Owner’s Representative.

1.04 DETAILED PROGRESS SCHEDULE

- A. In addition to requirements of General Conditions, submit Detailed Progress Schedule with each corresponding definable feature of work (DFOW) beginning with Notice to Proceed and continuing through Final Completion. Submit prior to the Preconstruction Conference.
- B. Show the duration and sequences of activities required for complete performance of the Work reflecting means and methods chosen by Contractor.
- C. When accepted by Owner’s Representative, Detailed Progress Schedule will replace Preliminary Progress Schedule and become the accepted Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules, and shall provide progress/actual dates to baseline start and baseline finish dates.
- D. Format: In accordance with Article Progress Schedule—Critical Path Network, or alternative format approved by Owner’s Representative.

1.05 PROGRESS SCHEDULE—CRITICAL PATH NETWORK

- A. General: Comprehensive computer-generated schedule using Microsoft Project 2013 or similar.
- B. Contents:
1. Schedule will begin with the date of Notice of Award and conclude with the date of Final Completion.
 2. Identify Work calendar basis using days as a unit of measure.
 3. Show complete interdependence and sequence of construction and Project-related activities reasonably required to complete the Work.

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4. Identify the Work of separate stages and other logically grouped activities, and clearly identify critical path of activities.
5. Reflect sequences of the Work, restraints, delivery windows, review times, Contract Times and Project Milestones set forth in the Agreement and this section.
6. Include as applicable, at a minimum:
 - a. Obtaining permits, submittals for early product procurement, and long lead time items.
 - b. Mobilization and other preliminary activities.
 - c. Residential Preconstruction, Residential Post-construction, and Project Post-construction meetings.
 - d. Specified Work sequences, constraints, and Milestones, including Substantial Completion date(s) Contract Work.
 - e. Remediation activities.
 - f. Landscape Work and plantings.
 - g. Watering activities
 - h. Maintenance.
 - i. Project closeout and cleanup.
 - j. Demobilization.

C. Schedule Report:

1. List information for each activity in tabular format, including at a minimum:
 - a. Activity Identification Number.
 - b. Activity Description.
 - c. Original Duration.
 - d. Remaining Duration.
 - e. Early Start Date (Actual start on Updated Progress Schedules).
 - f. Early Finish Date (Actual finish on Updated Progress Schedules).
 - g. Late Start Date.
 - h. Late Finish Date.
 - i. Total Float.
2. Sort reports, in ascending order, as listed below:
 - a. Activity number sequence with predecessor and successor activity.

1.06 PROGRESS OF THE WORK

A. Updated Progress Schedule shall reflect:

1. Progress of Work to within 2 working days prior to submission.
2. Approved changes in Work scope and activities modified since submission.

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3. Delays in Submittals or resubmittals, deliveries, or Work.
4. Adjusted or modified sequences of Work.
5. Other identifiable changes.
6. Revised projections of progress and completion.
7. Report of changed logic.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 GENERAL

- A. This section may be revised prior to or during the RA to comply with the Owner's Representatives submittal procedures.

1.02 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Owner's Representative and/or Engineer's approval.
- B. Informational Submittal: Information submitted by Contractor that requires Owner's Representative and/or Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.03 PROCEDURES

- A. Direct submittals to the Owner's Representative at the address, which will be determined and provided during the Preconstruction Conference, unless specified otherwise.
- B. Electronic Submittals: Submittals will, unless otherwise specified, be made in electronic format.
 - 1. Each submittal will be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
 - 2. Electronic files that contain more than 10 pages in PDF format will contain internal bookmarking from an index page to major sections of the document.
 - 3. PDF files will be set to open "Bookmarks and Page" view.
 - 4. Add general information to each PDF file, including title, subject, author, and keywords.
 - 5. PDF files will be set up to print legibly at 8.5-inch by 11-inch or 11-inch by 17-inch. No other paper sizes will be accepted.
 - 6. Submit new electronic files for each resubmittal.
 - 7. Include a copy of the Transmittal of Submittal form, with each electronic file.
 - 8. Provide Owner's Representative and Engineer with authorization to reproduce and distribute each file as many times as necessary for Project documentation.

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C. Transmittal of Submittal:

1. Contractor will:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Identify each submittal with the following information before submitting to Owner's Representative:
 - 1) Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2) Owner's Representative will not review submittals that do not bear Contractor's signature certifying the submittal has been checked and approved for compliance with Contract Documents, and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Engineer's Submittal form attached at end of this section, or approved equivalent.
3. Identify each submittal with the following:
 - a. Numbering and Tracking System:
 - 1) Sequentially number each submittal.
 - 2) Resubmission of submittal will have original number with sequential alphabetic suffix.
 - b. Specification section and paragraph to which submittal applies.
 - c. Project title and Owner's Representative's project number.
 - d. Date of transmittal.
 - e. Names of Owner's Representative, Contractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.
5. All action and information submittals will be submitted electronically on a secure website provided by Owner's Representative or Engineer.

D. Processing Time:

1. Time for review will commence on Owner's Representative's and/or Engineer's receipt of submittal.
2. Owner's Representative and/or Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 10 work days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.

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4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.
- E. Resubmittals: Clearly identify each correction or change made.
- F. Incomplete Submittals: Owner's Representative and/or Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
- G. Submittals not required by Contract Documents:
 1. Will not be reviewed and will be returned stamped "Not Subject to Review."
 2. Owner's Representative and/or Engineer will keep one copy and return submittal to Contractor.

1.04 ACTION SUBMITTALS

- A. Prepare and submit Action Submittals required by individual specification sections.
- B. Shop Drawings:
 1. Copies: 1 hard copy unless requested otherwise by the Owner's Representative and/or Engineer, and one reproducible electronic copy, except copyrighted documents.
 2. Identify and Indicate:
 - a. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - b. Project-specific information drawn accurately to scale.
 3. Product Data: Provide as specified in individual specifications.
- C. Samples:
 1. Copies: One, unless otherwise specified in individual specifications.
 2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - a. Manufacturer name.
 - b. Model number.
 - c. Material.
 - d. Sample source.

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D. Action Submittal Dispositions: Owner's Representative and/or Engineer will review submittals and respond as appropriate:

1. Approved:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.
2. Approved as Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Owner's Representative's and/or Engineer's notations.
 - b. Distribution: Electronic.
3. Partial Approval, Resubmit as Noted:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Owner's Representative's notations.
 - c. Distribution: Electronic.
4. Revise and Resubmit:
 - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.

1.05 INFORMATIONAL SUBMITTALS

A. General:

1. Copies: Submit to secure website provided by Owner's Representative or Engineer, unless otherwise indicated in individual specification section.
2. Refer to individual specification sections for specific submittal requirements.
3. Owner's Representative and/or Engineer will review each submittal. If submittal meets conditions of the Contract, Owner's Representative will forward copy to appropriate parties. If Owner's Representative and/or Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Owner's Representative will retain one copy and return remaining copy with review comments to Contractor, and require that submittal be corrected and resubmitted.

B. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.

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C. Certificates:

1. General:
 - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
 - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
3. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
4. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.

D. Closeout Submittals: In accordance with Section 01 77 00, Closeout Procedures by the Contractor.

E. Contractor-design Data (related to temporary construction):

1. List of assumptions.
2. List of performance and design criteria.
3. Calculations.
4. List of applicable codes and regulations.
5. Name and version of software.
6. Information requested in individual specification section.

F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

G. Operation and Maintenance Data: As required in Section 32 92 00, Turf and Grasses.

H. Payment:

1. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.
2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.

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- I. Quality Control Documentation: As required in Section 01 45 16.13, Contractor Quality Control.
- J. Schedules:
 - 1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.
 - a. Show for each, at a minimum, the following:
 - 1) Specification section number.
 - 2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
 - 3) Estimated date of submission to Owner's Representative and Engineer, including reviewing and processing time.
 - 2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
 - 3. Progress Schedules: In accordance with Section 01 32 00, Construction Progress Documentation.
- K. Special Guarantee: Supplier's written guarantee as required in individual specification sections.
- L. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- M. Submittals Required by Laws, Regulations, and Governing Agencies:
 - 1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 - 2. Transmit to Owner's Representative and/or Engineer for their records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- N. Test, Evaluation, and Inspection Reports:
 - 1. General: Will contain signature of person responsible for test or report.
 - 2. Field:
 - a. As a minimum, include the following:
 - 1) Project title and number.
 - 2) Date and time.
 - 3) Record of temperature and weather conditions.
 - 4) Identification of product and specification section.

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- 5) Type and location of test, Sample, or inspection, including referenced standard or code.
- 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
- 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
- 8) Provide interpretation of test results, when requested by Owner's Representative or Engineer.
- 9) Other items as identified in individual specification sections.

O. Training Data: In accordance with Section 01 11 00, Summary of Work.

1.06 SUPPLEMENTS

A. The supplements listed below, following "End of Section", are part of this specification.

1. Forms: Transmittal of Contractor's Submittal.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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| | | | |
|---|--|---------------------------------|--|
| TRANSMITTAL OF CONTRACTOR'S SUBMITTAL (ATTACH TO EACH SUBMITTAL) | | | |
| DATE: _____ | | | |
| TO: _____ _____ _____ _____ _____ FROM: _____ <div style="text-align: center;">Contractor</div> _____ _____ _____ | Submittal No.: _____ <input type="checkbox"/> New Submittal <input type="checkbox"/> Resubmittal Project: _____ Project No.: _____ Specification Section No.: _____ (Cover only one section with each transmittal) Schedule Date of Submittal: _____ _____ | | |
| SUBMITTAL TYPE: | <input type="checkbox"/> Shop Drawing <input type="checkbox"/> Deferred | <input type="checkbox"/> Sample | <input type="checkbox"/> Informational |

The following items are hereby submitted:

| Number of Copies | Description of Item Submitted (Type, Size, Model Number, Etc.) | Spec. and Para. No. | Drawing or Brochure Number | Contains Variation to Contract | |
|------------------|--|---------------------|----------------------------|--------------------------------|-----|
| | | | | No | Yes |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
Contractor (Authorized Signature)

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SECTION 01 45 16.13
CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
 - a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

1.02 DEFINITIONS

- A. Contractor Quality Control (CQC): The means by which Contractor ensures that the construction and restoration, respectively, complies with the requirements of the Contract.
- B. Definable Feature of Work (DFOW): A task that is separate and distinct from other tasks and has separate control requirements

1.03 SUBMITTALS

- A. Informational Submittals:
1. CQC Report Format.
 2. CQC Plan: Submit, not later than 14 days after receipt of Notice to Proceed.
 3. CQC Report: Submit a daily signed electronic document by 9:00 A.M. the following work day.

1.04 OWNER'S REPRESENTATIVE'S QUALITY ASSURANCE

- A. All Work is subject to Owner's Representative's quality assurance inspection and testing at all locations and at all reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.

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- B. Owner's Representative's quality assurance inspections and tests are for the sole benefit of Owner's Representative and do not:
 - 1. Relieve Contractor of responsibility for providing adequate quality control measures;
 - 2. Relieve Contractor of responsibility for damage to or loss of the material before acceptance;
 - 3. Constitute or imply acceptance; or
 - 4. Affect the continuing rights of Owner's Representative after acceptance of the completed Work.
- C. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirement.
- D. Promptly furnish all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Owner's Representative.
- E. Owner's Representative may charge Contractor for any additional cost of inspection or test when Work is not ready at the time specified by Contractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents.
- B. Maintain complete inspection records and make them available at all times to Owner and Owner's Representative.
- C. The quality control system will consist of plans, procedures, and organization necessary to produce an end product that complies with the Contract Documents. The system will cover all excavation and restoration operations, both onsite and offsite, including Work by subcontractors, fabricators, suppliers and purchasing agents, and will be keyed to the proposed construction sequence.

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3.02 COORDINATION MEETING

- A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Owner's Representative to discuss the quality control system.
- B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite Work, and the interrelationship of Owner's Representative's management and control with the Owner's Quality Assurance.
- C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Contractor.

3.03 QUALITY CONTROL ORGANIZATION

- A. CQC System Manager:
 - 1. Designate an individual within Contractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Contractor.
 - 1. CQC System Manager may perform other duties on the Project except as PM, CM, or other position where a conflict may exist with the CQC System Manager Stop Work authority.
 - 2. CQC System Manager will be an experienced construction person, with a minimum of 3 years construction experience on similar type Work.
 - 3. CQC System Manager will report to the Contractor's project manager or someone higher in the organization. Project manager in this context will mean the individual with responsibility for the overall quality and production management of the Project.
 - 4. CQC System Manager will be onsite during construction; periods of absence may not exceed 2 weeks at any one time.
 - 5. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.
- B. CQC Staff:
 - 1. Designate a CQC staff, available at the Site at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members will be subject to acceptance by Owner's Representative.

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2. CQC staff will take direction from CQC System Manager in matters pertaining to QC.
 3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities.
 4. The actual strength of the CQC staff may vary during any specific Work period to cover the needs of the Project. Add additional staff when necessary for a proper CQC organization.
- C. Organizational Changes: Obtain Owner's Representative's acceptance before replacing any member of the CQC staff. Requests for changes will include name, qualifications, duties, and responsibilities of the proposed replacement.

3.04 QUALITY CONTROL PHASING

- A. CQC will include at least three phases of control to be conducted by CQC System Manager for all definable features of Work (DFOWs), as follows:
1. Preparatory Phase:
 - a. Notify Owner's Representative at least 48 hours in advance of beginning any of the required action of the preparatory phase.
 - b. This phase will include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager will instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
 - c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.
 - d. Perform prior to beginning Work on each definable feature of Work:
 - 1) Review applicable Contract Specifications.
 - 2) Review applicable Contract Drawings.
 - 3) Verify that all materials and/or equipment have been tested, submitted, and approved.
 - 4) Verify that provisions have been made to provide required control inspection and testing.

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- 5) Examine the Work area to verify that all required preliminary Work has been completed and is in compliance with the Contract.
 - 6) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
 - 7) Review the appropriate activity hazard analysis to verify safety requirements are met.
 - 8) Review procedures for constructing the Work, including repetitive deficiencies.
 - 9) Document construction tolerances and workmanship standards for that phase of the Work.
 - 10) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Owner's Representative.
2. Initial Phase:
- a. Accomplish at the beginning of a definable feature of Work:
 - 1) Notify Owner's Representative at least 48 hours in advance of beginning the initial phase.
 - 2) Perform prior to beginning Work on each definable feature of Work:
 - a) Review minutes of the preparatory meeting.
 - b) Check preliminary Work to verify compliance with Contract requirements.
 - c) Verify required control inspection and testing.
 - d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
 - e) Resolve all differences.
 - f) Check safety to include compliance with and upgrading of the health and safety plan and activity hazard analysis. Review the activity hazard analysis with each worker.
 - 3) Separate minutes of this phase will be prepared by the CQC System Manager and attached to the QC report. Exact location of initial phase will be indicated for future reference and comparison with follow-up phases.
 - 4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

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3. Follow-up Phase:
 - a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing, until completion of the particular feature of Work.
 - b. Daily checks will be made a matter of record in the CQC documentation and will document specific results of inspections for all features of Work for the day or shift.
 - c. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.
4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Owner if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.05 CONTRACTOR QUALITY CONTROL PLAN

A. General:

1. Plan will identify personnel, procedures, control, instructions, test, records, and forms to be used.
2. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
3. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.

B. Content:

1. Plan will cover the intended CQC organization for the entire Contract and will include the following, as a minimum:
 - a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Paragraph 3.04 QC Phasing) for all aspects of the Work specified.

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- b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
 - c. Letters of Authority: A copy of a letter to the CQC System Manager signed by an authorized official of the firm, describing the responsibilities and delegating sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop Work which is not in compliance with the Contract. The CQC System Manager will issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to Owner's Representative.
 - d. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of Subcontractors, offsite fabricators, suppliers and purchasing agents.
 - e. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.
 - f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.
 - g. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
 - h. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.
- C. Acceptance of Plans: Acceptance of the Contractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner's Representative reserves the right to require Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.
- D. Notification of Changes: After acceptance of the CQC plan, Contractor will notify Owner's Representative, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Owner's Representative.

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3.06 CONTRACTOR QUALITY CONTROL REPORT

- A. As a minimum, prepare a CQC report for every 7 calendar days. Account for all days throughout the life of the Contract. Reports will be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.
- B. Maintain current records of quality control operations, activities, and tests performed, including the Work of subcontractors and suppliers.
- C. Records will be on an acceptable form and will be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:
 - 1. Contractor and their areas of responsibility.
 - 2. Operating equipment with hours worked, idle, or down for repair.
 - 3. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
 - 4. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
 - 5. Material received with statement as to its acceptability and storage. This includes material received by Subcontractor(s) (i.e. trees and plants).
 - 6. Identify submittals reviewed, with Subcontract reference, by whom, and action taken.
 - 7. Offsite surveillance activities, including actions taken.
 - 8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
 - 9. List instructions given/received and conflicts in Drawings and/or Specifications.
 - 10. Contractor's verification statement.
 - 11. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
 - 12. These records will cover both conforming and deficient features and will include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

3.07 SUBMITTAL QUALITY CONTROL

- A. Submittals will be as specified in Section 01 33 00, Submittal Procedures. The CQC organization will be responsible for certifying that all submittals are in compliance with the Contract requirements.

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3.08 TESTING QUALITY CONTROL

A. Testing Procedure:

1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
 - a. Verify testing procedures comply with Contract requirements.
 - b. Verify facilities and testing equipment are available and comply with testing standards.
 - c. Check test instrument calibration data against certified standards.
 - d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
 - e. Documentation:
 - 1) Record results of all tests taken, both passing and failing, on the CQC report for the date taken.
 - 2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
 - 3) Actual test reports may be submitted later, if approved by Owner's Representative, with a reference to the test number and date taken.
 - 4) Provide directly to Owner's Representative an information copy of tests performed by an offsite or commercial test facility. Test results will be signed by an engineer registered in the state where the tests are performed.
 - 5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.

- B. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel will meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing will be certified by the American Concrete Institute (ACI).

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3.09 COMPLETION INSPECTION

- A. CQC System Manager will conduct an inspection of the Work at the completion of all Work or any milestone established by a completion time stated in the Contract.
- B. Punchlist:
 - 1. CQC System Manager will develop a punchlist of items which do not conform to the Contract requirements.
 - 2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
 - 3. CQC System Manager or staff will make a second inspection to ascertain that all deficiencies have been corrected and so notify the Owner's Representative.
 - 4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the Project is divided into increments by separate completion dates.

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Association of Nurserymen (AAN): American Standards for Nursery Stock.
 2. Federal Emergency Management Agency (FEMA).
 3. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
 4. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
 5. U.S. Department of Agriculture (USDA): Urban Hydrology for Small Watersheds.
 6. OSHA 29 CFR 1910 and 1926.
 7. U.S. Environmental Protection Agency:
 - a. Oil Pollution Prevention, 40 CFR, Part 112.
 - b. National Pollutant Discharge Elimination System (NPDES) (40 Code of Federal Regulations Part 122.26(a)(14)(x)).
 - c. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.
 8. Illinois Environmental Protection Agency:
 - a. Illinois Administrative Code (IAC) Title 35, Part 808 Special Waste.
 - b. Illinois General NPDES Permit No. ILR10 for Stormwater Discharges from Construction Site Activities (IEPA 2013), IAC Title 35, Subtitle C, Chapter 1, Part 302, the and the guidance provided in the Illinois Urban Manual (www.aiswcd.org/IU).
 - c. Air Pollution Control Rules, IAC Title 35, Subtitle B, Chapter 1, Part 212 Visible and Particulate Matter Emissions, Subpart K.
 - d. IAC Title 35, Part 212.301, 212.315, and 212.316 of Subpart K Fugitive Particulate Matter.
 - e. IAC Title 35, Subtitle H Part 900.102-106 Noise.

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1.02 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
2. Temporary Utility Submittals:
 - a. Electric power supply plans.
 - b. Water supply source.
3. Temporary Construction Submittals:
 - a. Staging area location plan. The Contractor will provide separation of clean borrow material stockpiles from potentially contaminated soils at the FA.
 - b. Fencing and protective barrier locations and details.
4. Temporary Control Submittals (where relevant, include controls both at properties and at the staging area at the FA:
 - a. Stormwater Pollution Prevention Plan, as described in paragraph 1.05.B. of this section.
 - b. Noise control plan: Submit information to mitigate construction noise, including method of construction, operating procedures, equipment to be used, and acoustical treatments to minimize disturbance to the community and comply with applicable local noise regulations and ordinances.
 - c. Fugitive Dust control plan: Submit information for the management of stockpiles and transport of bulk materials to minimize fugitive dust emissions in accordance with the Air Monitoring Plan.
 - d. Air Monitoring Plan: The Contractor will revise the draft Air Monitoring Plan developed by the Engineer. The revised plan will include the following details regarding Contractor's real-time air monitoring for particulate matter on a continuous basis at residences, excavated soil staging pile (if excavated material is not placed directly into the consolidation area) and stockpiles at the FA:
 - 1) Data will be recorded to data logger once per minute and checked by personnel once every 30 minutes.
 - 2) Air monitoring equipment will be placed in locations to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone.
 - 3) Dust monitors will be placed upwind and downwind of earthwork activities at a property to determine the impact of the construction activities on air quality.

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- 4) Dust monitoring data will be evaluated against the USEPA National Ambient Air Quality Standards (NAAQS) for PM10 of 0.15 milligrams per cubic meter.
 - 5) During work hours, an alarm will be set at 0.5 milligrams per cubic meter to observe activities and determine the cause for elevated particulate concentrations and evaluate potential mitigation measures. Sustained exceedances of 0.5 milligrams per cubic meter during work hours will be mitigated with measures such as application of water, street cleaning, covering stockpiles and staging pile except when loading or unloading, modifying work procedures or stopping work to maintain the 24-hour time-weighted average concentration below the criteria.
 - 6) Exceedances of the dust monitoring criteria of 0.5 milligrams per cubic meter (determined by the Engineer based on the maximum arsenic, cadmium, lead, and zinc concentrations detected during the RI, TCRA Investigation, and predesign sampling) will require dust abatement measures, typically application of water, or stop work and further evaluation.
 - 7) Contractor personnel working within or in close proximity to the excavation will wear personal sampling pumps and have samples collected for laboratory analysis to determine personal exposure to the COCs.
5. Air monitoring results, to be submitted by Contractor:
- a. PM10 results:
 - 1) Microsoft Excel 2013 compatible electronic file with results recorded in 1-minute intervals.
 - 2) File names denoting address being sampled, sample meter location (i.e., upwind or downwind), and sample date.
 - 3) Submitted daily.
 - b. Arsenic, cadmium, lead, and zinc analytical results from personal sampling pumps:
 - 1) Laboratory analytical report in Adobe Acrobat 9.0 or compatible version.
 - 2) Electronic data deliverable in Microsoft Excel 2013 compatible electronic file.
 - 3) Report sample collection interval, volume, and address where personal sample was collected.
 - 4) Employee names may be redacted.
 - 5) Submitted monthly.

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- c. Transportation and Disposal Plan will describe the sampling, transportation, and disposal of wastes, and construction debris. The Transportation and Disposal Plan will include the following:
- 1) Sequences of construction affecting use of roadways, time required for each phase of the Work, and phasing of operations to provide necessary access for pedestrians and vehicles.
 - 2) The sequence of moving, handling and loading of trucks.
 - 3) Verification that loaded trucks meet roadway weight and size requirements.
 - 4) Describe how excavated soil will be transported in compliance with DOT regulations.
 - 5) Describe signage and protective measures for pedestrian traffic on sidewalks and vehicular traffic on streets.
 - 6) Information for intended haul routes to and from the staging area and approved disposal facility. Routes to and from the residential properties will generally be shortest route available.
 - 7) Sampling, handling and disposal requirements for stormwater that has contacted impacted soils and required removal from an excavation. If disposed of offsite, that contact water is an Illinois Special Waste.
 - 8) Provisions for disposal of used personal protective equipment or other remediation-derived wastes generated.
 - 9) Plans for transporting excavated soil to the FA for placement into the containment area or excavated soil staging pile, and importing materials from approved borrow sources.
 - 10) Preparation of waste characterization profiles, proof of disposal facility approval under the CERCLA Offsite Rule, set forth in the National Contingency Plan, at 40 Code of Federal Regulations 300.440, and proof of disposal facility acceptance.
 - 11) Provisions for street cleaning and equipment decontamination.
 - 12) Shipping documentation, including but not limited to, manifests and bill of lading for onsite or offsite transportation of contaminated soils and/or liquids for approval. Submittals to be provided prior to beginning work and as work progresses (as needed; submitted daily).
 - 13) Identification of all waste streams.

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- 14) Waste and container management, storage, labeling, and marking.
- 15) Spill response and reporting (for potential spills related to transportation of materials).
- d. Records and reporting.

1.03 PROTECTION OF WORK AND PROPERTY

A. General:

- 1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
- 2. No residence or business will be cut off from vehicular traffic, unless special arrangements have been made and approved by the Owner's Representative.
- 3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered a long line of the Work, unless other arrangements satisfactory to the Owner's Representative and to owners of said utilities have been made.
- 4. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
- 5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
- 6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
- 7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
- 8. Notify property owners and utility offices that may be affected by construction operations at least 2 days in advance. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.

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9. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
10. The Contractor is responsible for repair or replacement of damage caused as a result of construction activities at no cost to Owner, Engineer, or Owner's Representative. This responsibility also includes secondary damage caused by the event.
11. Unless approved by Owner's Representative or Engineer, the Contractor will maintain original Site drainage.

1.04 VEHICULAR TRAFFIC

- A. Traffic Control Plan: Adhere to traffic control plan in the Transportation and Disposal Plan reviewed and accepted by Owner's Representative. Changes to this plan will be made only by written approval of appropriate public authority and the Owner's Representative. Secure approvals for necessary changes so as not to delay progress of the Work.

1.05 TEMPORARY CONTROLS

- A. Contractor will provide safety and environmental controls during remediation-related construction activities to protect the public, workers, and environment and ensure that all work is performed in a manner that meets the intent of federal, state, and local environmental regulations.
- B. Stormwater Pollution Prevention Plan: Contractor will submit a Stormwater Pollution Prevention Plan for approval by the Owner's Representative. The Stormwater Pollution Prevention Plan will be consistent with substantive requirements of Illinois's General NPDES Permit No. ILR10 for Stormwater Discharges from Construction Site Activities (IEPA 2018), Illinois Administrative Code Title 35, Subtitle C, Chapter 1, Part 302, the National Pollutant Discharge Elimination System (NPDES) requirements (40 Code of Federal Regulations Part 122.26(a)(14)(x).) and the guidance provided in the Illinois Urban Manual (www.aiswcd.org/IU). The plan will:
 1. Describe the best management practices for earth disturbing activities and procedures to control soil erosion, sediment transport, and potential spills, including from stockpiles of general backfill, topsoil, and excavated soils, excavations, and at the construction site entrance and exit.
 2. Describe erosion and sediment control at staging, stockpiling, and storage areas as well as at the residential properties, including silt fence or other appropriate measures and inlet protection.

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3. Describe how water entering excavations and contained on top of liners will be discharged as clean stormwater and other stormwater management activities.
 4. Address preplanning for spill control and spill control measures, including potential spills of decontamination rinsate, contaminated soils, vehicle fuel, and hydraulic oil.
 5. Address fire control materials and equipment.
 6. Address drum, container, and tank handling and moving procedures.
 7. Address protection against stockpile runoff at residential properties and at the FA staging/stockpiling area (if excavated soils are stockpiled).
 8. Describe inspection and maintenance procedures.
- C. Contractor will install, inspect, maintain and provide recordkeeping for temporary stormwater pollution prevention and soil erosion and sediment control measures under the authorization of an Illinois qualified person (i.e., Professional Engineer, Certified Professional in Erosion and Sediment Control, Certified Erosion Sediment and Stormwater Inspector, or other knowledgeable person) who possesses the skills to assess conditions at construction site that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The Contractor will ensure that temporary stormwater pollution prevention and soil erosion and sediment control measures prevent erosion during earthwork activities at residential properties. The work will include the furnishing of all labor, materials, tools, and equipment to perform the work and services necessary as herein specified.
1. Erosion control will be performed in accordance with the Stormwater Pollution Prevention Plan.
 2. Soil erosion stabilization and sedimentation control may consist of construction, inspection, maintenance and recordkeeping of temporary erosion control such as inlet protection, silt fences, erosion bales, etc.
 - a. Inlet protection will be installed at the nearest downgradient storm sewer inlet.
 - b. Silt fence will be installed at excavation areas where slope is present greater than 1V:5H.
 3. Temporary stormwater pollution prevention and soil erosion and sediment control measures at or near residential properties will be removed by the Contractor after final street cleaning is performed subsequent to the completion of restoration activities specified in Section 32 91 26, Site Restoration.

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- D. Contractor will install, inspect, maintain, and remove temporary stormwater pollution prevention and erosion and sediment control measures to prevent erosion at the FA staging area and stockpiles.
1. Soil erosion stabilization and sedimentation control will consist of the following elements:
- a. Construction, inspection, maintenance, and record keeping of temporary erosion and sediment control such as silt fences, erosion bales, etc. where runoff will occur onto unpaved surfaces.
 - b. If excavated soils are placed in an excavated soil staging pile, they will be staged and managed with appropriate protection in accordance with Illinois Administrative Code Title 35 724.654. The staging pile will be located on the FA, as shown on the Drawings, no greater than 10 feet high, and sloped no greater than 4H:1V.
 - c. Stockpiles and excavated soil staging pile will not be placed over existing monitoring wells located at the FA, nor will they prohibit access to existing monitoring wells.
 - d. Stockpiles and excavated soil staging pile will not be placed in locations that will hinder or require double-handling material during construction of the consolidation area.
 - e. Temporary stockpile and excavated soil staging pile coverings: At the direction of the Owner's Representative, placement and maintenance of reinforced plastic covering over stockpiles and excavated soil staging pile during non-working hours or inclement weather to reduce fugitive dust emissions from stockpiles and staging piles and protect from precipitation and erosion.
 - f. As necessary, place stone at the FA staging area between the stockpiles (and excavated soil staging pile) and the entrance to minimize tracking of soils from the staging area.
 - g. Documentation of final restoration of staging pile at the FA (if excavated soil is not placed in consolidation area).

PART 2 PRODUCTS

2.01 OWNER'S REPRESENTATIVE'S FIELD OFFICES

- A. Furnish equipment specified for exclusive use of Owner's Representative and its representatives.
- B. Ownership of equipment furnished under this article will remain, unless otherwise specified, that of Contractor.
- C. Equipment furnished will be new or like new in appearance and function.

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D. Minimum Features:

1. 110-volt lighting and wall plugs.
2. Fluorescent ceiling lights.
3. Electric heating and self-contained air conditioning unit, properly sized for Project locale and conditions. Provide ample electric power to operate installed systems.
4. Railed stairways and landings at entrances.
5. Sign on entrance door reading Owner Representative's name (TBD), letter height 4 inches minimum.
6. Exterior Door(s):
 - a. Number: One.
 - b. Type: Solid core.
 - c. Lock(s): Cylindrical.
7. Number of Windows: Two.
8. Minimum Interior Height: 8 feet.

E. Floor Space: Minimum 225 square feet.

F. Rooms: Two, with minimum private office floor space of 80 square feet, and remainder configured for open meeting or storage space.

G. Trailer Type Mobile Structure: One.

H. All-metal frame; all-metal exterior, sides, and roof; and insulated double walls, floor, and roof.

I. Security guard screens on windows.

J. Storage Room: One, 6 feet by 8 feet, with door with cylinder lock, keyed differently than exterior door locks. Provide two sets of keys.

K. Shelving in Storage Room: 72 linear feet, 18 inches deep.

L. Blinds or drapes on windows.

M. Office Equipment—General:

1. Desk: Two, steel, 30 inches by 60 inches with desk surface located 29 inches from floor.
2. Desk Chair: Two, with the following characteristics:
 - a. Five castor base.
 - b. Adjustable height.
 - c. Swivels.
 - d. Locking Back.

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- e. Adjustable seat back for height and angle.
- f. Adjustable arms.
- 3. Folding Table: One, 36 inches by 72 inches.
- 4. Steel Folding Chairs: Two.
- 5. Four-Drawer Steel File with Lock: One, legal width.
- 6. Bookcase: Two, 36 inches wide by 48 inches high.
- 7. Wastepaper Basket: Two.
- 8. First-Aid Kit: One.
- 9. Tri-Class (ABC), Dry Chemical Fire Extinguisher, 10-Pound: One.
- 10. Telephone: Two, with one intercom line and two incoming/outgoing lines, Touch-Tone, with conference speaker, and 12-foot coiled handset cord.
- 11. Copier, capable of producing both black and white, and color images, multi-function with scanning, email, and fax capabilities, self-feeding, capable of providing 11-inch by 17-inch, 8-1/2-inch by 11-inch, and 8-1/2-inch by 14-inch copies and collating multiple copies to 10, and reduction and enlargement capabilities; include maintenance service agreement for duration of contract.

2.02 TEMPORARY STOCKPILE COVERING (EXCAVATED SOIL STAGING PILE AND BORROW STOCKPILES)

- A. Cover excavated soil staging pile prior to seeding, at the direction of the Owner's Representative.
- B. Cover borrow stockpiles at the end of the day, and/or at Owner Representative's direction.
- C. Cover material will be reinforced plastic, 6 mil minimum, with an ultra-violet ray inhibitor or polyvinyl chloride (PVC) a minimum of 10 mils thick.
- D. Anchor with sandbags or approved equivalent spaced along the perimeter to prevent the liner from becoming displaced.
- E. When freezing conditions are expected, use PVC material.
- F. See Standard Detail 3125-140, Temporary Stockpile Covering.

2.03 SILT FENCE—MINIMUM REQUIREMENTS

- A. Fabric will be minimum 15 mils thick, with a tensile strength of 120 pounds, and with an equivalent opening size of 170 (U.S. Standard Sieve).
- B. Silt fence must have at least two permanent markings or affixed labels per assembled roll (100 feet) which positively identifies the fabricator.

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- C. Silt fence fabric will be attached to machine pointed No. 2 common grade hardwood posts using at least five staples through wood lath a minimum of 3/8-inch thick and 2.0 feet long.
- D. Silt fence posts must have cross-sectional area of at least 2.25 square inches and must be a minimum of 36 inches in length.

2.04 STRAW MULCH/BALES

- A. Threshed straw of oats, wheat, barley, or rye, free from seed of diseased plant residue, noxious weeds, weed seeds, harmful chemical residues, or clean salt hay.

2.05 OTHER EROSION AND SEDIMENT CONTROL ITEMS

- A. Products suggested by the Contractor and approved by the Owner's Representative to prevent stormwater pollution and erosion and control sediment.

2.06 HIGH-VISIBILITY FENCE

- A. As specified in Section 31 10 00, Site Preparation.

2.07 BARRICADES AND LIGHTS

- A. As required to perform Work.

2.08 SIGNS AND EQUIPMENT

- A. As specified in paragraph 3.03.C and/or recommended by Contractor and approved by the Owner's Representative.
- B. Delivered equipment will be inspected at the project site. Equipment that is not in good condition or which arrives with contents and/or contamination will not be loaded and will be turned away with the costs borne by the Contractor, at the sole discretion of Owner's Representative.

PART 3 EXECUTION

3.01 MOBILIZATION

- A. This task will consist of mobilizing Contractor personnel, equipment, any Subcontractors, and materials to the project site. The Contractor will be responsible for coordinating and making arrangements for storage and staging areas for construction equipment and fill/borrow material, temporary storage of Property Owners' and Tenants' objects and materials.

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- B. The Contractor will install erosion control measures according to best management practices and the Stormwater Pollution Prevention Plan, and also prepare a soil storage area that is designed to contain runoff. A vehicle decontamination area will be constructed by the Facility Area Remedial Action Contractor (FA RA Contractor) for Contractor use.
 - 1. Coordination and scheduling of mobilization activities will be discussed with Owner's Representative in detail during the preconstruction meeting.
- C. Coordinate mobilization activities with the FA RA Contractor.
- D. Mobilization will include, but not be limited to, these principal items:
 - 1. Obtaining required approvals and permits.
 - 2. Mobilizing Contractor's and Owner's Representative's field office and equipment required for operations onto Site.
 - 3. Secure facilities to store and protect Property Owners' and Tenants' moved objects and materials during construction.
 - 4. Installing temporary construction power, wiring, and lighting facilities.
 - 5. Providing onsite communication facilities if desired by Contractor.
 - 6. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 - 7. Arranging for Contractor's storage yard.
 - 8. Posting OSHA required notices and establishing safety programs and procedures.
 - 9. Having Contractor's superintendent at the Site full time.

3.02 OWNER'S REPRESENTATIVE'S FIELD OFFICE

- A. Coordinate placement of field office with FA RA Contractor.
- B. Make available for Owner's Representative's use prior to start of the Work at Site and to remain on Site for minimum of 30 days after final acceptance of the Work.
- C. Locate where directed by Owner's Representative; level, block, tie down, skirt, provide stairways, and relocate when necessary and approved. Construct on proper foundations, and provide proper surface drainage and connections for utility services.
- D. Provide minimum 100 square feet of gravel or crushed rock base, minimum depth of 4 inches, at each entrance.

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- E. Raise grade under field office, as necessary, to elevation adequate to avoid flooding.
- F. Provide sanitary facilities in compliance with state and local health authorities.
- G. Exterior Door Keys: Furnish two set(s) of keys.
- H. Telephone:
 - 1. Provide number of incoming lines equal to that specified for telephone type.
 - 2. Provide separate analog modem line.
 - 3. Provide appropriate jacks; locate as directed by Owner's Representative.
 - 4. Provide wiring necessary for complete telephone system.
- I. Telecommunications:
 - 1. Provide DSL or cable Internet connection with minimum of five live portable computer (PC) ports.
 - 2. Provide appropriate jacks, CAT-5 patch cords, wiring, and equipment required for a complete telecommunications system.
 - 3. Arrange and provide for telecommunication service for use during construction. Pay costs of installation, maintenance, and monthly service of internet connection.
- J. Maintain in good repair and appearance, and provide weekly cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.
- K. Replenish, as needed, copy paper and toner.

3.03 TEMPORARY UTILITIES

- A. Power:
 - 1. No electric power is available at Site. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by Owner, unless otherwise recommended by Owner's Representative at Substantial Completion.
 - 2. Contractor will provide portable generators for required power at the sites, unless alternative power source is obtained.
 - 3. Contractor will arrange for electrical hook-ups at the field offices and staging areas, if desired. Cost of electric power will be borne by Contractor.

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- B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.
- C. Heating, Cooling, and Ventilating:
 - 1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage because of temperature or humidity.
 - 2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
 - 3. Pay costs of installation, maintenance, operation, removal, and fuel consumed.
 - 4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.
 - 5. If permanent natural gas piping is used for temporary heating units, do not modify or reroute gas piping without approval of utility company. Provide separate gas metering as required by utility.
- D. Water: Contractor is not allowed to use water from the residence. Contractor must make arrangements for and bear costs of providing water required for construction purposes and for drinking by construction personnel during construction. Contractor will be responsible to obtain permits or approvals for water sources and monitor flowrates and quantities from sources.
- E. Sanitary and Personnel Facilities: Provide and maintain facilities for Owner's Representative's employees, Contractors, and subcontractors. Service, clean, and maintain facilities and enclosures a minimum of two times per week, with a separate facility provided for female personnel.
- F. Telephone Service:
 - 1. Contractor will arrange and provide onsite telephone service for Contractor use during construction, if needed. Contractor will pay costs of installation and monthly bills.
 - 2. Contractor will arrange and provide onsite telephone system for Owner's Representative use during construction. Pay for installation and basic monthly billing charges.
 - 3. Contractor will pay Owner's Representative's long distance charges from \$400 monthly allowance. At Project completion, difference between total actual long distance charges and cumulative amount of this allowance will be adjusted by Change Order.

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- G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.04 PROTECTION OF WORK AND PROPERTY

A. Site Security:

- 1. Contractor will provide temporary storage enclosures for tools, materials, supplies or equipment at the FA.
- 2. The Owner, Engineer, and Owner's Representative are not responsible for theft, damages or losses incurred during the performance of this Work.

B. Barricades and Lights:

- 1. Provide as required by the Vehicle Code and in sufficient quantity to safeguard public and the Work.
- 2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
- 3. Provide to protect existing facilities and adjacent properties from potential damage.
- 4. Locate to enable access by Property Owners and Tenants.
- 5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
- 6. Locate barricades at the nearest intersecting public thoroughfare on each side of blocked section in accordance with governing requirements.
- 7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

C. Signs and Equipment:

- 1. Conform to applicable federal, state or local requirements.
- 2. Traffic Cones: Provide to delineate traffic lanes to guide and separate traffic movements.
- 3. High-Level Warning Flag Units: Provide two in advance of traffic approaching the Work, each displaying three flags mounted at a height of 9 feet.
- 4. DETOUR Signs: Provide two right arrow or left arrow, placed as approved by Owner's Representative.
- 5. RIGHT or LEFT LANE CLOSED AHEAD Signs: Provide two, place in advance of lane to be closed.

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6. Provide at obstructions, such as material piles and equipment.
7. Use to alert general public of construction hazards, which would include surface irregularities, unramped walkways, grade changes, and trenches or excavations in roadways and in other public access areas.

D. Existing Structures:

1. Where Contractor contemplates removal of small structures such as mailboxes, or signposts that interfere with Contractor's operations, obtain approval of Property Owner and Owner's Representative. Measure and document the location of the structure prior to its removal.
2. Move mailboxes to temporary locations accessible to postal service.
3. Replace items removed in their original location and a condition equal to or better than original.

E. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

F. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Manage all water from the work in accordance with the Stormwater Pollution Prevention Plan and Transportation and Disposal Plan. Maintain foundations and parts of the Work free from water.

G. Archaeological Finds: Should finds of an archaeological or paleontological nature be made within Site limits, immediately notify Owner and Owner's Representative. Continue the Work in other areas without interruption.

H. Endangered and Threatened Species:

1. Take precautions necessary and prudent to protect native endangered and threatened flora and fauna.
2. Notify Owner's Representative of construction activities that might threaten endangered and threatened species or their habitats.
3. Owner's Representative will mark areas known as habitats of endangered and threatened species prior to commencement of onsite activities.
4. Additional areas will be marked by Owner's Representative as other habitats of endangered and threatened species become known during construction.

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3.05 TEMPORARY CONTROLS

A. Air Pollution Control:

1. Minimize air pollution from construction operations.
2. Burning of waste materials, rubbish, or other debris will not be permitted.
3. Conduct earthwork and trucking operations to minimize dust. Strictly adhere to applicable environmental regulations for dust prevention.
4. Conduct all air monitoring in accordance with the approved Air Monitoring Plan.

B. Noise Control:

1. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances and noise requirements outlined in the Illinois Administrative Code (IAC) 35, Subpart H, Chapter 1, Part 900, including method of construction, equipment to be used, and acoustical treatments.
2. Standard hours for operation of construction equipment at properties and Village alleyways are Monday through Friday from 7 a.m. to 6 p.m. Weekend hours can be added from 9 a.m. to 6 p.m. if necessary work permits and approval from the Owner's Representative have been obtained.

C. Water Pollution Control:

1. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning" and "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," Illinois's General NPDES Permit for Stormwater Discharges from Construction Site Activities (IEPA 2014), Illinois Administrative Code Title 35, Subtitle C, Chapter 1, Part 302, the National Pollutant Discharge Elimination System (NPDES) requirements (40 Code of Federal Regulations Parts 121 and 122 et seq., Illinois Urban Manual www.aiswcd.org/IUM ,and other applicable guidance documents or regulations." Comply with Earthwork Subcontractor's approved Stormwater Pollution Prevention Plan.
2. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

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D. Stormwater, Erosion, Sediment, and Flood Control:

1. Provide, inspect, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.
2. To reduce erosion, and control stormwater run-on and runoff during construction activities, the following structural and nonstructural best management practices will be included in the Stormwater Pollution Prevention Plan and be implemented:
 - a. Minimize the area of bare soil exposed at one time (that is, phased excavation).
 - b. Minimize the amount of time an excavation is open.
 - c. Stabilizing cut-and-fill slopes.
 - d. Perimeter controls (such as drainage diversions).
 - e. Sediment basins and traps.
 - f. Silt fences at excavations.
 - g. Site restoration (for example, regrading, seeding, placing gravel, or repaving with asphalt or concrete).
3. Prepare site only after adequate erosion and sediment controls are in place as discussed during the pre-construction meeting. Contractor will identify anticipated duration excavation will remain open and what will be required.

E. Dust Control:

1. The Contractor will comply with the fugitive dust control program and meet the applicable requirements of Air Pollution Control Rules, Illinois Administrative Code Title 35, Subtitle B, Chapter 1, Part 212 Visible and Particulate Matter Emissions, Subpart K, Parts 212.
2. The Contractor will be responsible for controlling the dust and airborne dirt generated by construction activities. Water or other suppression means will be used as needed to control dust.
3. The Contractor will perform street cleaning daily from the time earthwork is initiated until backfilling of excavations is complete. Additional street cleaning will be performed by the Contractor if directed by the Owner's Representative. Final street cleaning will be conducted prior to the removal of the temporary erosion control measures, such as inlet protection. Street cleaning will be performed with equipment that will capture debris after sweeping, using either mechanical collection methods or vacuum, to minimize fugitive dust emissions.

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4. Street cleaning will be performed by the Contractor if directed by the Owner's Representative. Final street cleaning will be conducted prior to the removal of the temporary erosion control measures by the Contractor, such as inlet protection. Street cleaning will be performed with equipment that will capture debris after sweeping, using either mechanical collection methods or vacuum, to minimize fugitive dust emissions.
5. Sidewalks, driveways or similar surfaces adjacent to the excavation areas will be covered daily with 6 mil polyethylene (or equivalent) as possible from the start of excavation through completion of backfill. Manual cleaning will be performed daily if spillage occurs onto these surfaces.
6. All excavation activities will be performed in a manner that limits blowing dust and tracking of mud onto site access roads. Dust control measures may include vacuuming, water spraying, and sweeping or other methods allowed under local regulations. The Contractor will prepare a fugitive dust control plan that will address the management of stockpiles and staging piles and transport of bulk materials.
7. The Contractor will perform air monitoring at the stockpile area, excavated soil stockpile (if present) and residential properties in accordance with the approved Air Monitoring Plan.

3.06 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road will be closed, except by written permission of proper authority. Ensure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Road Closures: Maintain satisfactory means of exit for persons residing or having occasion to transact business along route of the Work. If it is necessary to close off roadway or alley providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each Property Owner so affected 3 days prior to such closure. In such cases, closings of up to 4 hours may be allowed with Owner's Representative approval.

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- E. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.
- F. Notify fire department and police department before closing street or portion thereof, but maintain access for emergency vehicles to fire hydrants. Notify said departments when streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without written permission from fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish Owner's Representative's night emergency telephone numbers to police department.
- G. Coordinate traffic routing with that of others working in same or adjacent areas.

3.07 SURFACE WATER CONTROL IN EXCAVATIONS

- A. Install temporary liners in excavated areas overnight, where possible, to prevent stormwater from contacting soils in open excavations. Anchor the temporary liners with sandbags or approved equivalent spaced along the perimeter of or within the excavation to prevent the liner from becoming displaced. Stormwater contained on top of the liner will be discharged as clean stormwater in accordance with the approved Stormwater Pollution Prevention Plan.
- B. If an excavation is unable to be covered and standing water is present in the excavation when backfill must occur, and water cannot be allowed to infiltrate due to schedule or other constraints, Contractor will remove, contain, and transport water at the FA for dust suppression in areas of the FA that have not been remediated, in accordance with the approved Transportation and Disposal Plan.
- C. Remove surface runoff controls when no longer needed.
- D. Provide supplemental ditches and sumps only as necessary to collect water from rain events. Do not use ditches and sumps as primary means of water control.

3.08 DISPOSAL OF IMPACTED EXCAVATION WATER

- A. Any accumulated water that has contacted contaminated soil will be containerized for use at the FA for dust suppression within an area that has not yet been remediated. If needed, the Owner's Representative will characterize excavation water that has contacted impacted soils as required by applicable laws and regulations.

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- B. The Contractor will assist the Owner's Representative with collecting samples for analytical testing.
- C. If disposed offsite, the Contractor will dispose of impacted excavation water at a facility approved by the Owner's Representative and the USEPA under the CERCLA Offsite Rule, set forth in the National Contingency Plan, at 40 Code of Federal Regulations 300.440, Offsite Rule.

3.09 CLEANING DURING CONSTRUCTION

- A. Unless otherwise directed by the Owner's Representative, the Contractor will use street-sweeping equipment to sweep roadways, alleys, or other areas affected by the Work on a daily basis from the onset of excavation and continue until the removal of the temporary erosion control measures, such as inlet protection. Street sweeping equipment will contain debris after sweeping, through either mechanical means or with a vacuum, to minimize fugitive dust emissions.

3.10 DECONTAMINATION OF EQUIPMENT AND PERSONNEL

- A. A decontamination pad will be constructed by the FA RA Contractor, for use by the surrounding properties RA Contractor, as needed.
- B. Field equipment that has been used for excavation activities will be brushed free of all adhering soil materials (tires, tailgates, etc.) prior to leaving a residential property. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it collected during loading operations. All decontamination will be performed by Contractor personnel with current 40-hour HAZWOPER training, medical monitoring and other required training.
- C. All field equipment leaving the FA, will be brushed free of all adhering soil materials (tires, tailgates, etc.) prior to leaving the FA. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it collected during loading operations. All decontamination will be performed by Contractor personnel with current 40-hour HAZWOPER training.
- D. Wet decontamination will be performed on the decontamination pad at the staging area prior to use of equipment for backfill activities unless dedicated separate excavation and backfill equipment are used.
- E. Decontamination water will be contained with the stormwater that has contacted impacted soil and used at the FA for dust suppression in areas that have not been remediated. Decontamination water will be contained in 55-gallon UN rated drums, portable tank(s), or approved equivalent.

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- F. Field equipment that has come into contact with any potentially contaminated material will be decontaminated. The equipment will be visually inspected for signs of contamination, and the cleaning procedure will be repeated until the equipment is visually clean. The Contractor will fully decontaminate all equipment on the decontamination pad at the staging area before leaving the site. All contaminated equipment will be cleaned by the Contractor, and inspected/accepted by Owner's Representative before leaving the site. All equipment decontamination will be documented in the field logbooks.

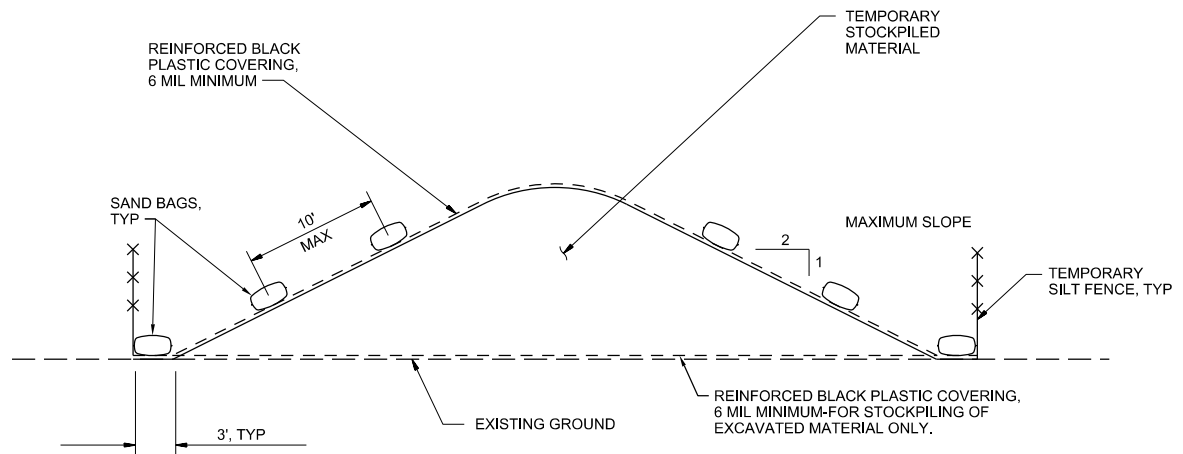
3.11 DEMOBILIZATION

- A. Upon completion of Work, all field equipment, temporary facilities, and other miscellaneous items (for example, barricades, caution tapes, and signs) resulting from or used during field operations will be removed.
- B. All wastes and general construction debris generated by construction activities will be properly disposed of offsite prior to demobilization.

3.12 SUPPLEMENT

- A. The supplement listed below, following "End of Section," are a part of this Specification:
 - 1. Standard Detail 3125-140, Temporary Stockpile Covering.

END OF SECTION



NOTES:

1. ALL SEAMS SHALL BE TAPED OR WEIGHTED DOWN FULL LENGTH. ALL SEAMS SHALL HAVE A MINIMUM 12" OVERLAP.
2. SEAMS PARALLEL TO THE SLOPE CONTOUR SHALL HAVE THE UPHILL SHEET OVERLAP THE DOWN HILL SHEET.
3. NO SURFACE RUN-OFF SHALL BE ALLOWED TO RUN UNDER THE PLASTIC COVERING.
4. DRAINAGE FROM AREAS COVERED BY REINFORCED PLASTIC SHEETING SHALL BE CONTROLLED SUCH THAT NO DISCHARGE OCCURS DIRECTLY ONTO UNCONTROLLED DISTURBED AREAS OF THE PROPERTY OR STAGING AREA.

DETAIL 3125-140 TEMPORARY STOCKPILE COVERING

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SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
 - a. Record Documents: All remaining record documents not previously submitted.
 - b. Special bonds, Special Guarantees, and Service Agreements.
 - c. Consent of Surety to Final Payment: As required in General Conditions.
 - d. Releases or Waivers of Liens and Claims: As required in General Conditions.
 - e. Releases from Agreements.
 - f. Final Application for Payment: Submit in accordance with General Terms and Conditions.

1.02 RECORD DOCUMENTS

A. Quality Assurance:

1. Furnish qualified and experienced person, whose duty and responsibility will be to maintain record documents.
2. Accuracy of Records:
 - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - b. Purpose of Project record documents is to document factual information regarding aspects of the Work.
3. Make entries as Work progresses.
4. Prior to submitting each request for progress payment, request Owner's Representative's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Owner's Representative to recommend whole or any part of Contractor's Application for Payment, either partial or final.

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PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

A. General:

1. Following award of the Work, Engineer will provide electronic drawing files of the residential sites and a database of property addresses to the Owner's Representative. The Owner's Representative will obtain the current property access list from the EPA.
 - a. The Owner's Representative is responsible for obtaining access agreements and/or confirming the status of existing access agreements during the RA. The Contractor will not begin Work on a property until granted approval from the Owner's Representative.
2. Redline markups of approved construction documents will be accepted as Record Drawings.
3. Record information concurrently with construction.

B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by Owner's Representative and/or Engineer.

C. Making Entries on Drawings: As indicated in Section 01 31 13, Project Coordination.

END OF SECTION

SECTION 02 24 00
DELINEATION OF WETLANDS AND
OTHER WATERS OF THE UNITED STATES

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes work necessary to delineate wetlands across the entire Surrounding Properties Area (Off-FA) and prepare a recommendation for a US Army Corps of Engineers (USACE) Jurisdictional Determination of whether the wetlands are regulated under the Clean Water Act (CWA) Section 404. The work is to be performed following the protocol and methods in the *USACE Wetlands Delineation Manual Wetlands Research Program Technical Report Y-87-1 (1987 Manual)*, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*, the *USACE Jurisdictional Determination Form Instructional Guidebook, May 30, 2007 (JD Guidebook)* and any USACE St. Louis District requirements. The work also includes an optional task for preparation of a Substantive Requirements Document (SRD) for compliance with USACE Nationwide Permit 38 Cleanup of Toxic and Hazardous Waste.

1.02 DRAWINGS

- A. US Fish and Wildlife Service National Wetlands Inventory (NWI) of mapped wetlands for the site is included as Attachment A. Note that additional wetlands may appear on the NWI mapping depending on the scale. NWI is not designed for and is not suitable for making a CWA 404 delineation and determinations; a field delineation and site-specific recommendations about the field results is required.
- B. Attachment B and the Drawings show the properties within the Surrounding Properties, to be included in the field survey.

1.03 DEFINITIONS

- A. Wetland: The USACE (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Except in certain situations defined in the *1987 Manual*, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

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1. Diagnostic Environmental Characteristics. Wetlands have the following general diagnostic environmental characteristics:
 - a. Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in a above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands are listed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*.
 - b. Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Indicators of soils developed under reducing conditions are listed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0, as supplemented by the Field Indicators of Hydric Soils, version 8.1, available at <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>)*.
 - c. Hydrology: The area is inundated either permanently or periodically at mean water depths less than or equal to 6.6 ft, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. Indicators of hydrologic conditions that occur in wetlands are listed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*.

1.04 SUBMITTALS

- A. Work Plan Submittal: In the Work Plan described in Section 01 11 00, Summary of Work, include a description of the approach to the wetland delineation, a map showing the areas to be included in the field survey, and a schedule for performing the delineation and associated reports.
- B. Technical Report of Wetlands Survey:
 1. Describe the delineation methodology and results of the delineation including USACE field data sheets, mapping developed from GPS data collection, and completion of all forms in the referenced guidance
 2. Representative Photos, labeled.
 3. Electronic GIS shape files, to include boundaries of each feature and paired wetland/upland boundary points for each feature (depending on size and shape, some features may require multiple paired points).

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OLD AMERICAN ZINC PLANT SUPERFUND SITE

4. Jurisdictional Determination Form: Jurisdictional Determination Form per the referenced guidance, including a recommendation, and at a minimum, Background Information, Summary of Findings, CWA Analysis, and Data Sources.
- C. NWP 38 Substantive Requirements Document (if regulated wetlands will be disturbed): Contractor will prepare a Substantive Requirements Document documenting how the remediation project will address each requirement in NWP 38 Cleanup of Toxic and Hazardous Waste.

1.05 SEQUENCING AND SCHEDULING

- A. Refer to Section 01 31 13, Project Coordination, for specific milestone dates and sequencing and scheduling constraints.

PART 2 PRODUCTS

2.01 HIGH VISIBILITY FLAGS

- A. All delineations will include high-visibility flags, sequentially numbered for each identified feature with a unique alphanumeric indicating the feature on each flag followed by the sequence from 1 to the final flag for the feature. The final flag for each feature also will include the word “END”.

PART 3 EXECUTION

3.01 GENERAL

- A. Field to survey to identify and delineate potential wetlands, waters, and other regulated areas. The work is to be performed following the protocols and methods in the USACE *Wetlands Delineation Manual Wetlands Research Program Technical Report Y-87-1 (1987 Manual)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*.
- B. Record the location of wetlands, waters, and other regulated areas using a handheld GPS unit with sub-meter accuracy. Record pertinent wetland and waters data and take representative photographs of environmental resources identified. Note any observed connections with potential underground water conduits such as drainage pipes.
- C. Collect data needed to prepare a recommendation for a US Army Corps of Engineers (USACE) Jurisdictional Determination of whether the wetlands are regulated under the Clean Water Act (CWA) Section 404. The work is to be performed following the protocol and methods in the USACE *Jurisdictional Determination Form Instructional Guidebook, May 30, 2007) (JD Guidebook)* and any USACE St. Louis District requirements.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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3.02 LIMITS

- A. Refer to Attachment B – Properties and Alleyways to be Remediated.

3.03 SUPPLEMENTS

- A. Attachment A – National Wetlands Inventory Map.
- B. Attachment B – Properties and Alleyways to be Remediated.

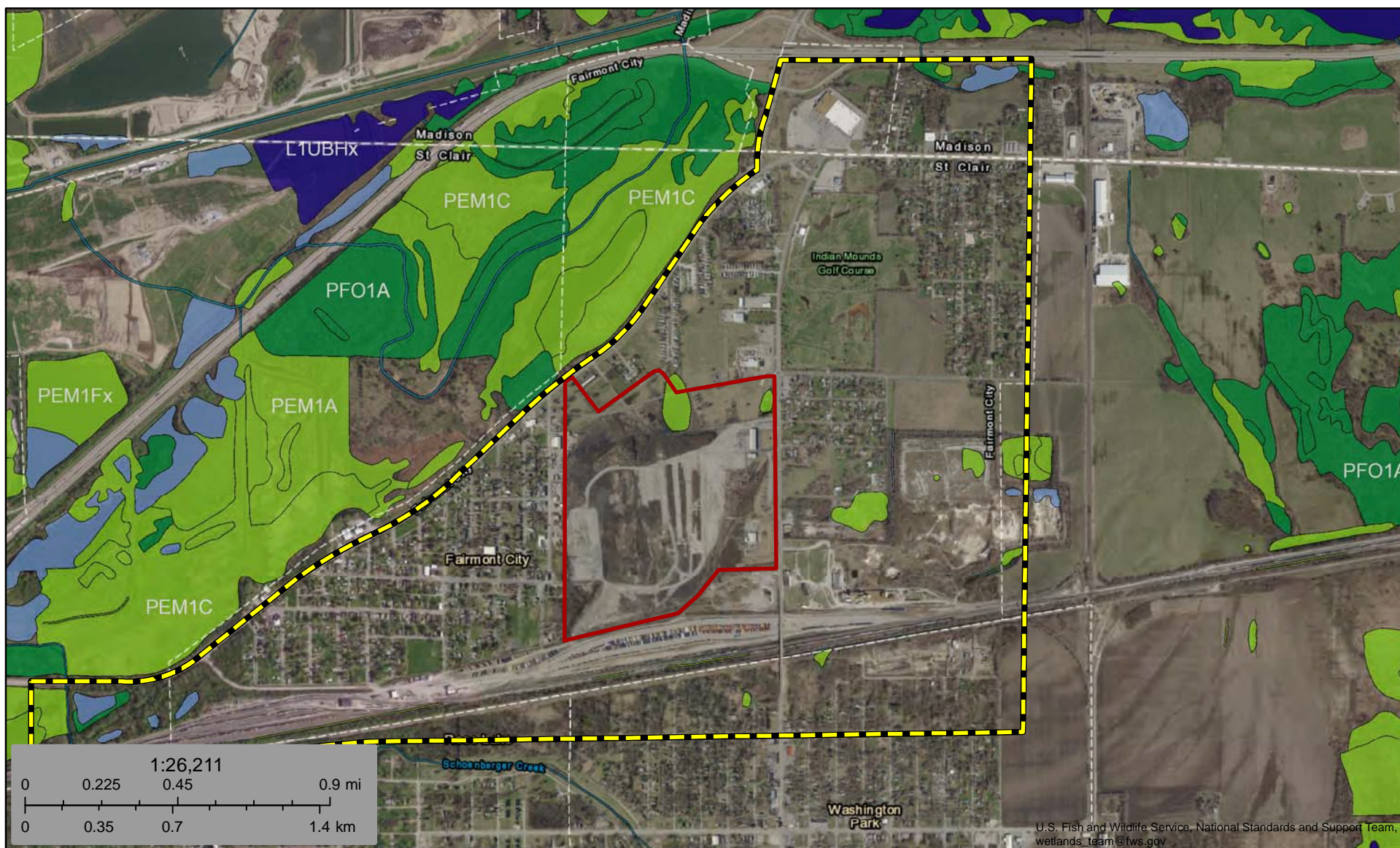
END OF SECTION



U.S. Fish and Wildlife Service

National Wetlands Inventory

Old American Zinc Plant - NWI Entire Site



June 7, 2018

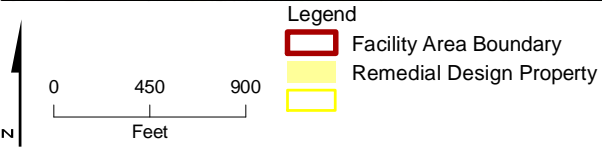
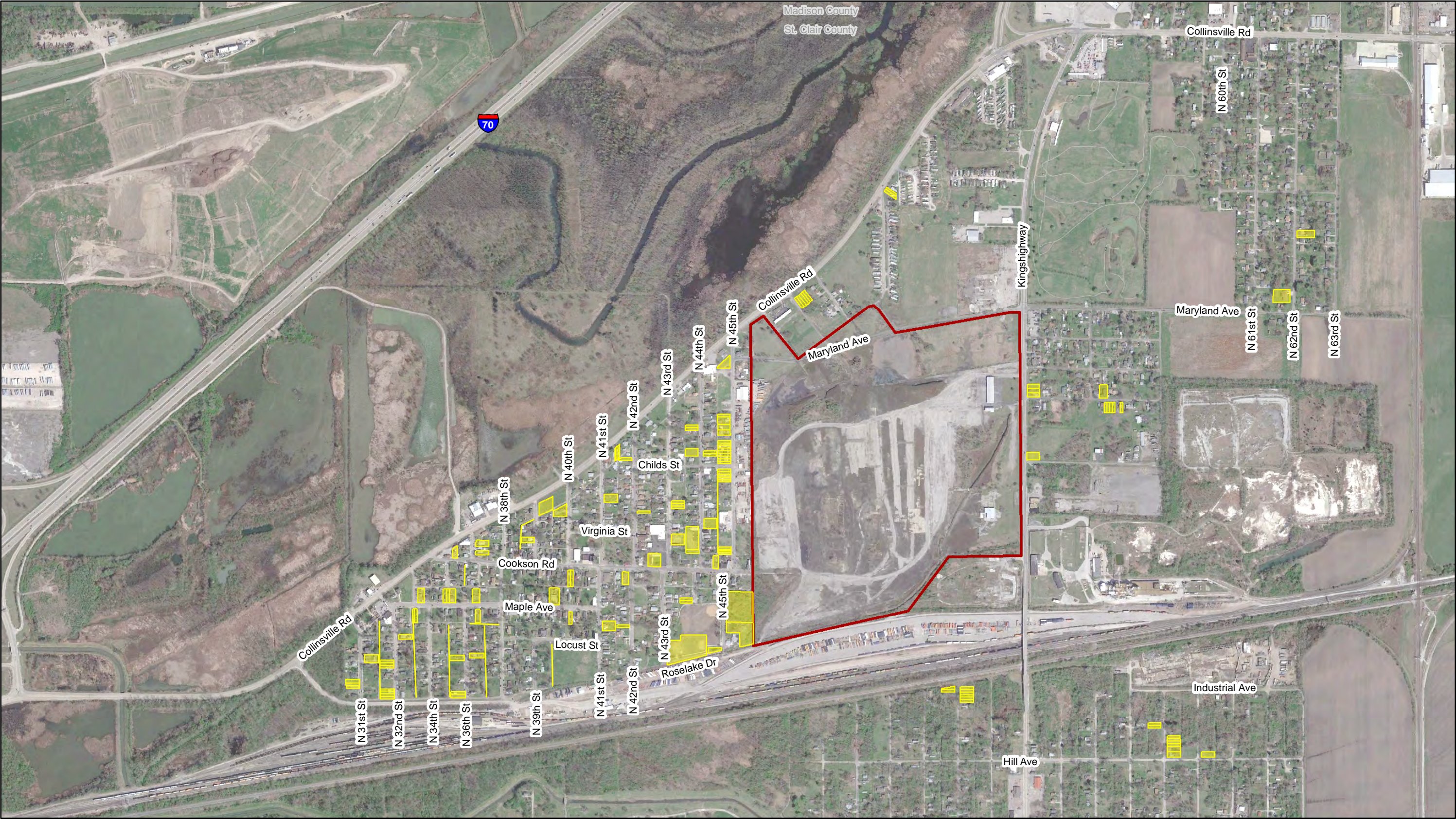
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland

- Freshwater Pond
- Lake
- Other
- Riverine

- Facility Area Boundary
- Surrounding Properties Boundary (Approximate)

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Notes:
1. Google earth Imagery Date: 4/2/2016.

Attachment B
Properties and Alleyways to be Remediated
Old American Zinc Plant Superfund Site
Fairmont City, Illinois

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 31 10 00
SITE PREPARATION

PART 1 GENERAL

1.01 GENERAL

- A. Items specified within this section are to be completed by the Contractor.

1.02 DEFINITIONS

- A. Interfering or Objectionable Material: Trash, rubbish and debris; vegetation and other organic matter, whether alive, dead or decaying.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface, including trees, stumps, roots and shrubs.
- C. Obstructions: Swing sets, benches, landscaping features, ground cover materials and borders, and other movable encumbrances to soil excavation.
- D. Excavation Limits: Areas, as shown or specified, within which Work is to be performed.
- E. Permanent Structures: Buildings, decks, stairs, sheds, telephone poles, pavements, utilities (above and below grade), and similar structures.
- F. Permanent Surfaces: Paved sidewalks, driveways, parking areas, roads, gravel surfaces, and similar structures constructed adjacent to or within the area of work. Paver patios and walkways are not planned for removal, but will be evaluated on a property specific basis.

1.03 SCHEDULING AND SEQUENCING

- A. The excavation area will be reviewed in the field to locate property boundaries and evaluate existing grade.
- B. Prepare property only after adequate security, safety, and erosion and sediment controls are in place as discussed during the Initial Preconstruction Meeting and specified in other sections.
- C. No mature trees greater than 4 inches diameter breast height (DBH) will be removed, unless approved by the Owner. Prior to removal of any trees, shrubs or obstructions, inspect for bird nests if the clearing is to be performed between April 1 and September 10, complete the Migratory Bird Field Assessment Checklist and Nest Clearing Protocol per Section 01 31 13, Supplement 2, and follow USFWS Nationwide Standard Conservation Measures guidance

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

(<https://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>). The inspection will be performed during the Residential Initial Pre-construction Meeting and again within 24-hours prior to clearing in consultation with the Owner's Representative. If bird nests are in trees or shrubs designated for removal or obstructions that will be temporarily relocated and stored, the nests will be inspected for the presence of eggs or hatchlings. Written documentation of the inspection shall be provided to the Owner's Representative. If present, do not disturb the nest; halt the clearing and consult with the Owner's Representative and the Marion Field Office of the US Fish and Wildlife Service and other appropriate agencies to assure compliance with the Migratory Bird Treaty Act.

- D. If unidentified archaeological deposits are uncovered during excavation, implement the protocol as described in the Unanticipated Discovery Plan (UDP) per Section 31 23 16, Excavation, to protect archaeological and cultural resources.

PART 2 PRODUCTS

2.01 HIGH-VISIBILITY FENCE

- A. Orange high density polyethylene in new condition.
- B. Forty-eight inches in height.

2.02 T-POSTS

- A. Galvanized steel.
- B. Seventy-two inches in height.

PART 3 EXECUTION

3.01 GENERAL

- A. Site preparation will include utility notification and coordination, removal of encumbrances to work, protection of trees, shrubs, vegetation not planned for removal, and protection of Permanent Structures and Permanent Surfaces.
- B. Utility Notification and Coordination:
 - 1. The Owner's Representative will interview the Property Owner (and tenant, if applicable) with the Contractor during the Initial Preconstruction Meeting to determine if there are any undocumented private utilities, such as irrigation systems, underground electric or gas lines, drain tile or underground active or abandoned tanks in the Work area.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

2. The Contractor will contact JULIE and may also use a third-party utility locating service to identify utilities before work begins at each property. The use of the third party utility locating service will be approved by the Owner's Representative. The Contractor will verify the completion of the utility locates and submit documentation to Owner's Representative a minimum of 3 days prior to beginning any intrusive activities at each property. The Contractor will record the location of the utilities on the property sketch for permanent documentation.
 3. The Contractor will review the utility locations, including connections to structures, during residential property preparatory phase meetings.
 4. Coordinate the Work with various utilities within Project limits. Notify applicable utilities if damage occurs or if conflicts or emergencies arise during Work.
 5. Utility Locator: JULIE
 - a. Telephone: 800-892-0123.
 6. Ameren Illinois (Electric and Gas):
 - a. Telephone (7:30 a.m. – 5:00 p.m.): 888-659-4540.
 7. Illinois American Water – East St. Louis Distribution (Water):
 - a. Telephone: 618-874-0523.
 8. Sewerage (Metro East Sanitary District):
 - a. Telephone: 618-876-1806.
- C. The excavation areas will be marked in the field by the Contractor in a manner to allow identification and inspection during execution of the Work.
- D. Orange plastic construction barrier fence, minimum 36-inch height, shall be installed around the excavation and work areas using steel "T" post spaced at 6-foot centers to separate pedestrian traffic from the work. The fence will be secured around open excavations before the end of each work day.
- E. Take necessary measures to protect existing Permanent Structures, Permanent Surfaces (i.e. sidewalks and patios), fencing and trees (or other vegetation) not planned for removal on or adjacent to the site from construction activities.
- F. This work includes removing sections of fencing and gates as necessary to allow access for the soil removal and restoration areas for each property. Fencing will remain in place where possible. Where necessary, fencing will be removed in a manner to protect it for reinstallation and reuse. Actual reuse will be based on site-specific evaluation of conditions. Fence openings made for access will be secured at the end of each work day to provide an equivalent level of security during non-working hours. All fencing not reused will be disposed of and replaced in-kind by the Contractor during restoration.

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- G. Obstructions, including outdoor play equipment, benches, and other encumbrances to soil excavation, will be tagged and removed from the property or relocated to an area of the property unaffected by Work. The Contractor will provide secure temporary storage at the FA during construction. Obstructions removed from the property will be securely stored and returned upon completion of restoration.
- H. Obstructions including landscaping features and borders are to be removed and stored for reuse or replaced as part of the restoration work, with like kind materials during restoration.
- I. Trees, shrubs and other aboveground vegetation required to be removed will be mulched and stockpiled at the FA in its own stockpile for use at the FA or for composting. The Contractor will coordinate the location of the stockpile with the FA RA Contractor. Vegetative debris will not be placed in the soil staging pile. Surface debris, such as bricks, concrete pieces and other materials that will not be stored and reused, shall be segregated, cleaned of soil and vegetation and disposed of as non-contaminated waste. The scope of this Work will be included in a unit price per ton and validated by weight tickets.
- J. Ensure that stormwater runoff control is installed and erosion and sediment controls are in place according to the Stormwater Pollution Prevention Plan and best management practices prior to excavation. Stormwater runoff controls shall, at a minimum, prevent migration to storm sewers, street gutters, streets, sidewalks, and driveways.
- K. Plywood with a thickness of 3/4-inch, or approved equivalent, will be placed on the ground surface if small equipment will travel through a tree drip-line or yard area(s) not scheduled for excavation to access the excavation area. The plywood will be secured to the ground to prevent its movement.

3.02 LIMITS

- A. Clearing and excavation is not to extend beyond excavation limits established during design and finalized during the Initial Preconstruction Meetings.
- B. Manually remove all vegetation in the buffer between the excavation extents and permanent structures, such as residence, mobile home supports, garage and sheds and surfaces, such as driveways or sidewalks. Grasses or groundcover shall be removed to a depth of 2.5 to 3 inches below grade. Removal may be performed manually or by using a sod cutter or equivalent as approved by Owner's Representative.
- C. Grasses and topsoil will be placed into the consolidation area or stockpiled at the soil staging pile on the FA with other soils excavated from the properties and alleyways.

**SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE**

3.03 REMOVAL OF INTERFERING OR OBJECTIONABLE MATERIALS

- A. Remove rubbish, trash and debris from work area as agreed during the Initial Preconstruction Meeting.
- B. Temporary relocation of large items, such as vehicles, will be coordinated with the Property Owner during the Initial Preconstruction Meeting.

3.04 REMOVAL OF INTERFERING PLANTINGS

- A. Remove trees, shrubs, and perennials that are designated for removal or interfere with construction activities with the approval of the Owner's Representative and Property Owner.
- B. Record sufficient information to uniquely identify each plant removed for accurate replacement and the location of each plant.

3.05 CLEARING

- A. Clear areas within excavation limits shown or specified.
- B. Cut off designated shrubs, brush, weeds and grasses flush with ground surface, including within planting beds.
- C. Trees slated for removal will be measured to determine their diameter at breast height per Section 32 93 00, Plants.
- D. Trees equal to or larger than 4 inches in diameter at breast height will not be removed unless directed by the Owner. If removed, they will be systematically cut up and removed in pieces from the top down by a licensed and bonded tree service. Stumps will be ground out or otherwise removed to a minimum depth of 12 inches below ground surface or at least as deep as the target excavation depth. Removal of stumps includes removal of lateral roots that would impede mechanical excavation.
- E. Existing stumps will not be removed during clearing activities.

3.06 DISPOSAL

- A. Dispose of debris offsite, which may consist of rubbish, trash materials and debris. Large items, such as vehicles, will not be disposed of and only temporarily relocated after coordination with the Property Owner.
- B. All wood and vegetative debris will be mulched and stockpiled separately from the excavated soil and borrow material stockpiles. Wood chips may not be reused offsite, but may be used at the FA with the approval of the Owner's Representative.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.01 GENERAL

- A. Items specified within this section to be completed by the Contractor.

1.02 DEFINITIONS

- A. Permanent Structures: As defined in Section 31 10 00, Site Preparation.
- B. Permanent Surfaces: As defined in Section 31 10 00, Site Preparation.

1.03 SUBMITTALS

- A. Draft filled-in non-hazardous waste manifest prior to the start of excavation, for liquid waste and general debris (i.e. bricks, concrete pieces, etc.).
- B. Draft filled-in hazardous waste manifest if determined by Owner's Representative to be required.
- C. Certificate of Destruction/Disposal.
- D. Haul tickets (submitted daily).
- E. Load trip tickets, documenting the number of trips, material and approximate load quantity from each property or alleyway to the FA. Format to be approved by the Owner's Representative.
- F. Completed non-hazardous waste manifests (submitted daily).

1.04 QUALITY ASSURANCE

- A. If surveying is performed, provide adequate survey control to avoid unauthorized over excavation (lateral and vertical).

1.05 WEATHER LIMITATIONS

- A. Excavation will not be performed during inclement weather.

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1.06 SEQUENCING AND SCHEDULING

- A. Complete applicable work requirements of Section 01 11 00, Summary of Work, Section 01 50 00, Temporary Facilities and Controls, and Section 31 10 00, Site Preparation, prior to excavation.
- B. Contractor will sequence work to minimize the time that excavations remain open.
 - 1. No more than three properties will be open (meaning, excavation has been started or completed, but backfill activities have not begun) at the same time per excavation crew.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Means and methods of access to soil excavation areas will be determined on a property-specific basis. The scope may include use of mechanical equipment, manual excavation, and other excavation techniques approved by the Owner's Representative, depending on site conditions. Contractor will determine the method(s) to access and excavate the properties in accordance with the specifications.
- B. Boundaries of the Work estimated for each property will be shown on the property drawings. Excavation boundaries are defined by the remedial investigation, TCRA investigation, and predesign sampling and will be confirmed or modified during Initial Preconstruction Meetings with concurrence from the Property Owner. Horizontal excavation limits will be performed to within 0.00 foot to plus 0.20 foot of the excavation boundaries shown on the Drawings. Based on field observations during the RA, the excavation boundaries may be expanded at the direction of the Owner or Owner's Representative.
- C. Depth of the Work for each site will be shown on the property drawings. XRF screening will be performed at the bottom of some excavations, as detailed on the Drawings. Pending the XRF screening results, additional excavation may be completed to a maximum depth of 30 inches. Over-excavation tolerance for final excavation depth as detailed on the drawings or determined by XRF screening is plus 0.10 foot, and under-excavation tolerance is minus 0.00 foot. *Owner's Representative may limit the depth of excavation if it is believed that further excavation may result in damage to structures or present safety hazards.*

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- D. Do not over excavate without written authorization of Owner's Representative.
- E. Remove or protect obstructions as shown and as specified in Section 01 50 00, Temporary Facilities and Controls, Article Protection of Work and Property.
- F. Manually excavate within 18-inches in all directions of the approximate underground utility markings in accordance with Illinois's Underground Utility Facilities Damage Prevention Act Illinois Compiled Statutes (ILCS) 220 50/ (220 ILCS 50/) and JULIE Excavator Handbook to verify actual location of the utility, and make provisions to support and protect utilities during excavation and backfill. The depth of underground utility varies by type and by property, so hand excavation should be performed with minimal force at any depth within the utility corridor. Alternative excavation methods may be performed if approved by the Owner's Representative.
- G. Manually excavate around fire hydrants, monitoring wells, sign posts and similar features to prevent damage from heavy equipment. Alternative excavation methods may be performed if approved by the Owner's Representative.
- H. Limits of construction for soil excavation are as follows (not inclusive of all limits):
 - 1. One foot offset from permanent structures and sloping away from the structure at a maximum slope of 1 horizontal to 1 vertical.
 - 2. Three feet offset from mobile home support point loads at a maximum slope of 1 horizontal to 1 vertical.
 - 3. Zero feet up to a maximum of 6 inches offset from permanent surfaces based on the integrity of the surface. Excavate from ground surface at a maximum slope of 1 horizontal to 1 vertical.
 - 4. Zero feet offset from property lines.
 - 5. Manually excavate up to within 6 inches of permanent structure, depending on its condition, where garden is adjacent to a permanent structure to minimize remaining impacted soil in areas of high contaminated soil exposure potential.
 - 6. Manually excavate the top 2.5 to 3 inches of grasses or groundcover in the offset areas to remove contaminated surface soils, and place in soil staging pile at FA.
 - 7. The excavation depth and extents will be identified on the property drawings with exception of:
 - a. Additional sampling performed to refine the excavation extent to address property owner concerns (i.e., specific plants, gardens, etc.) as approved by Owner's Representative.

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8. If suspected contaminated fill is observed anywhere in the excavation, the Owner's Representative must be notified immediately. At the direction of the Owner's Representative, additional excavation may be performed to remove suspected contaminated fill. If suspected contaminated fill is observed, post-excavation surveys will be performed only if deemed necessary by the Owner's Representative.
9. When the Contractor is satisfied that an excavation is to the specified lines and grades, the Owner's Representative will be notified and will perform an inspection. After inspection and approval, Owner's Representative will authorize the Contractor to proceed with backfilling of the excavation.
- I. Immediately notify Owner's Representative if unanticipated subsurface features are encountered during excavation, including, but not limited to, fill materials or debris, french drains, drain tile, unknown electrical and plumbing lines, and other similar conditions.
- J. Excavated soil will be direct loaded into lined trucks. If soil is dry and the truck bed is in good condition with a sealed end-gate, a liner may not be required, if approval is obtained by the Owner's Representative. Wet soil that has the potential to leach water during transportation must be placed in a lined truck.
- K. To the maximum extent practical unless otherwise approved by the Owner's Representative, trucks transporting excavated soil from residential areas to the FA must be loaded in a manner that avoids the trucks entering the excavation exclusion zone and requiring decontamination.
- L. Any trucks or other equipment entering an excavation area will be brushed free of all adhering soil material (tires, tailgates, etc.) prior to exiting the excavation area. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it may have collected.
- M. Ground covering must be used when loading trucks at the site of excavation to contain all inadvertent spillage that may occur during loading as described in paragraph 3.05.C below.
- N. The Contractor will immediately sweep up or otherwise contain any over-spill material that may occur during loading.
- O. Excavated material will be transported to the FA for direct placement into the consolidation area or for staging, as directed by the Owner's Representative.

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- P. All trucks entering the FA to dump excavated soils and then exiting the FA to return to an excavation site will be brushed free of all adhering soil material (tires, tailgates, etc.) prior to leaving the waste soil containment area. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it may have collected.

3.02 EXCAVATION AT OR ADJACENT TO PROTECTED TREES AND SHRUBS

- A. Manual excavation will be performed around tree roots as specified below. An alternative excavation method may be used with Owner Representative's approval.
1. Excavation will be performed to remove as much soil as possible around the root mass of trees, shrubs, and stumps, if the maximum excavation depth cannot be reached.
 2. Excavation within an 8-foot radius of the tree trunk (unless otherwise indicated on the Drawings) will be limited to manual excavation (or other approved method) to the full excavation depth, if possible.
 3. Manual excavation will expose woody roots 1 inch in diameter or greater to preserve the roots.
 4. Outside of the 8-foot radius from the tree trunk, mechanical excavation will be allowed to the required depth using a mini excavator, or approved equivalent, and spotter to remove soils between 1 inch diameter or larger roots previously exposed by manual excavation.
 5. If roots are damaged, Contractor will perform corrective pruning to create a clean cut and promote quick wound closure and regeneration.
- B. Protect from damage and preserve trees, shrubs, and other plants outside excavation limits.
1. Provide and maintain temporary barricades around trees.
 2. Employ manual excavation (or other approved method) as specified to minimize tree injury.
 3. Cover temporarily exposed roots with wet burlap, and keep burlap moist until soil is replaced around roots.
 4. Water vegetation, as necessary, to maintain health.
 5. Do not stockpile materials or permit unprotected traffic within drip lines of trees.
- C. In event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, treat damage by corrective pruning and other accepted horticultural and tree surgery practices. Costs incurred for these activities will be entirely by the Contractor and not reimbursed by Owner's Representative, Engineer, or Owner.

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3.03 REMOVAL OF EXCAVATED MATERIAL

- A. This task includes transporting the excavated material from the property. Properties may be adjacent to a sidewalk, boulevard, and/or street. Contractor will determine and propose the best method to load the excavated soil for transporting to the FA, making reasonable efforts to minimize migration of contaminated soil.
- B. The Contractor will perform work as outlined and approved in the Transportation and Disposal Plan.
- C. Contractor will provide means and methods to remove and transport excavated material to the FA and, if necessary, to the approved licensed offsite disposal facility.
- D. If unidentified archaeological deposits are uncovered during excavation, protocol will be implemented as outlined in the Unanticipated Discovery Plan (UDP) to protect archaeological and cultural resources. The UDP is included as Attachment A to this section, and will be updated as needed.

3.04 STOCKPILING EXCAVATED MATERIAL

- A. Excavated materials will not be allowed to be stockpiled except in the excavated soil staging pile at the FA with proper controls in place. Excavated material will be staged at the FA within approved areas, at the direction of the Owner's Representative.
- B. Post signs identifying material stockpiled. Post signs that are readable from all directions of approach to the staging pile. Signs should be clearly worded and readable.
- C. Excavated soil may be temporarily staged within the extent of the excavation prior to loading the soil for transport to the FA. Temporary staging piles will be removed before the end of construction activities each day.
- D. Do not stockpile excavated material outside of the excavation extents or within tree drip zones.
- E. Do not stockpile excavated materials near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line.
- F. Protection against staging pile runoff will be implemented in accordance with the approved Stormwater Pollution Prevention Plan.

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3.05 LOADING OF EXCAVATED MATERIAL

- A. This task includes all moving, handling and loading of excavated material for transportation. Sequencing of moving, handling and loading of trucks is to be done in accordance with the Contractor's Transportation and Disposal Plan.
- B. Trucks will be loaded, within allowable hauling weight limits, prior to transporting the excavated materials to the FA for placement into the consolidation area, or for staging, as directed by the Owner's Representative.
- C. A temporary ground covering 6 mil polyethylene or equivalent, will extend a minimum of 2 feet under trucks to minimize the potential for soil to spill into roadways or other areas not requiring remediation.

3.06 TRANSPORTATION, PLACEMENT OF EXCAVATED MATERIAL AT THE FA, AND DISPOSAL

- A. Comply with Contractor's approved Transportation and Disposal Plan.
- B. The exterior of each transportation vehicle and load of waste will be visually inspected and all loose soil/material removed and collected before leaving the excavation area.
- C. Each truckload or container will be lined, unless directed otherwise by the Owner's Representative, and covered with a fully functioning automatic tarp system that satisfies local, county, state and federal regulations prior to transporting the excavated materials to the FA.
- D. Transportation of nonhazardous wastes will be completed by a transporter licensed for commercial transportation in the State of Illinois. The transporter will adhere by and be in compliance with all regulatory requirements under 49 Code of Federal Regulations (CFR).
- E. Transporters will be required to abide by the health and safety plan, including PPE requirements when outside the vehicle. The Owner's Representative will not be responsible for any demurrage or other costs as a result of turning away a driver who does not comply with project health and safety requirements.
- F. Each driver will maintain proof of insurance for their truck and valid commercial driver's license in their truck.
- G. Vehicle fueling, lubrication, and maintenance may be performed on onsite with Owner Representative's approval, and in accordance with all local, state, and federal regulations. Spill control materials must be available at the fuel/maintenance site in adequate quantities to control solid or liquid spills.

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- H. Excavated soil removed from the residential properties will be transported and either placed directly into the consolidation area or staged at the FA, as directed by the Owner's Representative.
- I. Non-hazardous manifests, bills of lading, and hazardous waste manifests (if applicable) will be prepared by the Contractor and signed by the Owner's Representative on behalf of USEPA. The Contractor will provide completed draft manifests to Owner's Representative prior to beginning excavation work. A load trip ticket, or Owner's Representative-approved equivalent transportation form, will accompany each load from the residential properties or alleyways, stating the time, material being hauled, and approximate load quantity of every trip from each property or alleyway to the FA.
- J. The following procedures also will be observed when transporting wastes:
 - 1. Waste material transportation will comply with federal, state and local regulations.
 - 2. Impacts to general public traffic will be minimized.
 - 3. If road damage is caused by construction and/or hauling traffic, the damage will be repaired by the Contractor.
 - 4. Material spilled during the work or in transit will be reported to the Owner's Representative immediately and cleaned up in accordance with the Transportation and Disposal Plan.
 - 5. Safety and spill response procedures will be followed.
 - 6. Sealed trucks will be used to transport liquids or wet materials.
 - 7. No materials from other projects will be combined with materials from this site.
 - 8. The approved Transportation and Disposal Plan will be followed.

3.07 PLACEMENT OF EXCAVATED MATERIAL AT THE FA

- A. This task includes all moving, handling and loading of excavated material for placement at the FA. Sequencing of moving, handling and loading of trucks is to be done in accordance with the Contractor's Transportation and Disposal Plan.
- B. Excavated soil will be placed directly into the consolidation area. If soil cannot be placed into the consolidation area, it will be placed in the soil staging pile. The Owner's Representative will direct the Contractor where to place excavated material.
- C. The soil staging pile (if used) will be constructed in accordance with Section 01 50 00, Temporary Facilities and Controls.

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- D. The soil staging pile will be located at a location at the FA such that offsite migration of staged soil is prevented.
- E. The soil staging pile will be managed in accordance with the Stormwater Pollution Prevention Plan and covered with plastic sheeting at the end of the workday and during inclement weather, or as directed by the Owner's Representative.

3.08 SUPPLEMENT

- A. The supplement listed below, following "End of Section," are a part of this Specification:
 - 1. Attachment A: *Unanticipated Discovery Plan for Cultural Resources, Old American Zinc Plant Superfund Site Surrounding Areas Remediation Project, Saint Clair and Madison Counties, Illinois.*

END OF SECTION

Unanticipated Discovery Plan and
Archaeological Monitoring Plan for
Cultural Resources
Old American Zinc Plant Superfund
Site and Surrounding Areas
Remediation Project, Saint Clair and
Madison Counties, Illinois

WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



October 4, 2018

ch2m.SM

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Acronyms and Abbreviations

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| CH2M | CH2M HILL Engineers, Inc. |
| Council | Advisory Council on Historic Preservation |
| EPA | Environmental Protection Agency |
| IHPA | Illinois Historic Preservation Agency |
| NHPA | National Historic Preservation Act |
| NPS | National Park Service |
| NRHP | National Register of Historic Places |
| OAZ | Old American Zinc |
| QPA | Qualified Professional Archeologist |
| UDP | Unanticipated Discovery Plan |

Unanticipated Discovery Plan

Section 106 of the National Historic Preservation Act (NHPA) is identified in the U.S. Environmental Protection Agency (EPA) 2012 Record of Decision for the Old American Zinc Plant (OAZ) Superfund Site as an applicable or relevant and appropriate requirement, because of the nearby presence of the Cahokia Mounds State Historic Site, which is a National Historic Landmark and UNESCO World Heritage Site. The site is also listed as a historic property on the National Register of Historic Places (NRHP). A portion of the project area overlaps the boundary of Cahokia, as mapped by the Illinois Historic Preservation Agency (IHPA) and the NRHP. For EPA to meet the requirements of Section 106 of the NHPA, as defined in the Advisory Council on Historic Preservation (Council) regulations "Protection of Historic Properties" (36 Code of Federal Regulations Part 800), and following consultation with the Illinois State Historic Preservation Office (SHPO), the EPA has developed the following Unanticipated Discovery Plan (UDP) and Archaeological Monitoring Plan for use during soil sampling and related excavations in Saint Clair County and Madison County, Illinois. This plan will be implemented should new or additional historic properties be encountered during soil sampling, related excavation, and other ongoing activities on the proposed project (undertaking). This plan has been developed through consultation with the Illinois SHPO and in accordance with the regulations embodied in the "Protection of Historic Properties" issued by the Council (revised August 2004, www.achp.gov/regs-rev04.pdf). EPA and its cultural resources consultant, CH2M HILL, Inc. (CH2M), reviewed Illinois legislation (Illinois Compiled Statutes, Sections 3410, 3420, 3435, and 3440), which was used in the development of this UDP.

Termed "unanticipated discovery" or "post-review discovery," the identification of new or additional cultural resources during implementation of an undertaking typically occurs in the case of projects that involve excavation or ground-disturbing activities.

1.1 PROCEDURE WHEN CULTURAL MATERIALS ARE OBSERVED

The following measures will be implemented should an unanticipated cultural resource discovery be made by EPA, CH2M, any other contractor, or any subcontractor during construction of the proposed undertaking:

1. A Secretary of the Interior Qualified Archaeologist will be present during ground disturbing activities to monitor for the presence of previously undiscovered cultural resources.
2. The areal extent of all excavation areas should be recorded with GPS and dimensions measured. Excavated areas should be sketched on aerial photograph backdrops, as well. Profiles of excavation block walls will not be necessary, but a general measurement of the depth of each excavation area should be recorded. Areal extent of exposure of B-horizon should be recorded within each excavation area if not entirely exposed.
3. ALL exposed features will be mapped in plan. This includes major historic Euro-American or modern disturbances such as old house foundations or yard features (privies, cisterns, etc.). When only historic Euro-American or modern features are encountered a sketch map will suffice, however feature dimensions and relative distances should be measured and noted on the map. Scaled plan maps will be made of all exposed Pre-Columbian features and deposits. Feature dimension should be measured, and any exposed material noted. Fill colors and textures should be described, as well.

4. If human remains are encountered, all work will cease in the area and the coroner and SHPO archaeologist will be notified. Additional details are provided in the section below.
5. In some instances, a feature or deposits may need to be formally excavated even if remediation excavations will not impact them further. These cases will likely be rare and may not occur at all. For example, if an extraordinary artifact (i.e. figurines, tool caches, whole pots, etc.) is exposed at the top of a feature it should not be left in place. In some cases, excavation of the feature may be warranted (pit with a figurine, for example). The archaeologist may consult with the SHPO to determine the appropriate action for a feature or extraordinary artifact.
6. At the end of the 2018 work, a summary of monitoring activities will be prepared that, minimally, includes digitized maps showing the location of all observed excavated areas and feature plans.
7. Following the completion of the 2018 work, a plan will be developed for work to be conducted in 2019 in consultation with the Illinois SHPO.

In the case of an unanticipated discovery of human remains, EPA and CH2M will follow all relevant state and federal law, and recommendations regarding treatment of human remains as referenced above. EPA recognizes the importance of providing careful and respectful treatment for human remains recovered as an unanticipated discovery or as part of an archaeological investigation. In the event of an unanticipated discovery of human remains, EPA will consult with the NPS and IHPA as to the appropriate federally recognized tribes or other groups with which to consult. In coordination with the NPS, the IHPA, and other interested parties, a decision will be made for the treatment of the remains (for example, reburial, preservation in place, scientific study, sacred ritual, or a combination thereof). This protocol includes the following:

1. Should human remains be encountered, work in the general area of the discovery will stop immediately and the location will be immediately secured and protected from damage and disturbance. The area will be marked off with flagging, tape, or construction fencing.
2. The archaeologist will notify the coroner and SHPO archaeologist, Jeff Kruchten. Mr. Kruchten will contact Ms. Cobb, IDNR Archaeologist, who oversees the Human Skeletal Remains Protection Act. She will coordinate once the Coroner transfers jurisdiction.
3. Human remains, or associated artifacts will be left in place and not disturbed. No skeletal remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place and a plan of action has been developed.
4. The coroner and SHPO archaeologist will make the official ruling on the nature of the remains, being either forensic or archaeological.
5. If human remains are determined to be Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. The EPA will consult with the NPS, SHPO, and federally recognized tribal groups to develop a plan of action that is consistent with the Native American Graves Protection and Repatriation Act.

If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated in consultation with the Coroner, the IHPA, and other appropriate parties. Historic research and consultation with local authorities and historic experts will be conducted by Amy Favret, M.A., an archaeologist qualified to excavate and analyze human remains in Illinois, to try to determine the possible identity and affiliation of the remains and determine if there are any lineal descendants who should be consulted concerning the treatment of the remains. Notice of the discovery will be published in local media outlets for at least 3 days to assist in identification of lineal descendants.

Contact List

EPA Environmental Contact

Sheila Desai, EPA
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601 Riverfront Drive
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Illinois Historic Preservation Agency Contact

Jeffrey Kruchten
Chief Archaeologist
Illinois State Historic Preservation Office
Illinois Department of Natural Resources
1 Natural Resources Way
Springfield, Illinois 62702-1271
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Phone: 217-785-1279

Illinois Department of Natural Resources

Dawn Cobb
HSRP Coordinator, Archaeologist
Email: dawn.cobb@illinois.gov
Phone: 217-785-4992

St. Clair County Coroner

Calvin Dye
10 Public Square
Belleville, Illinois 42220
Phone: 618-277-8682

Madison County Coroner

Steve Nonn
157 N Main Street #354
Edwardsville, Illinois 62025

SECTION 2 – CONTACT LIST

Email: sponnn@co.madison.il.us
Phone: 618-692-7478

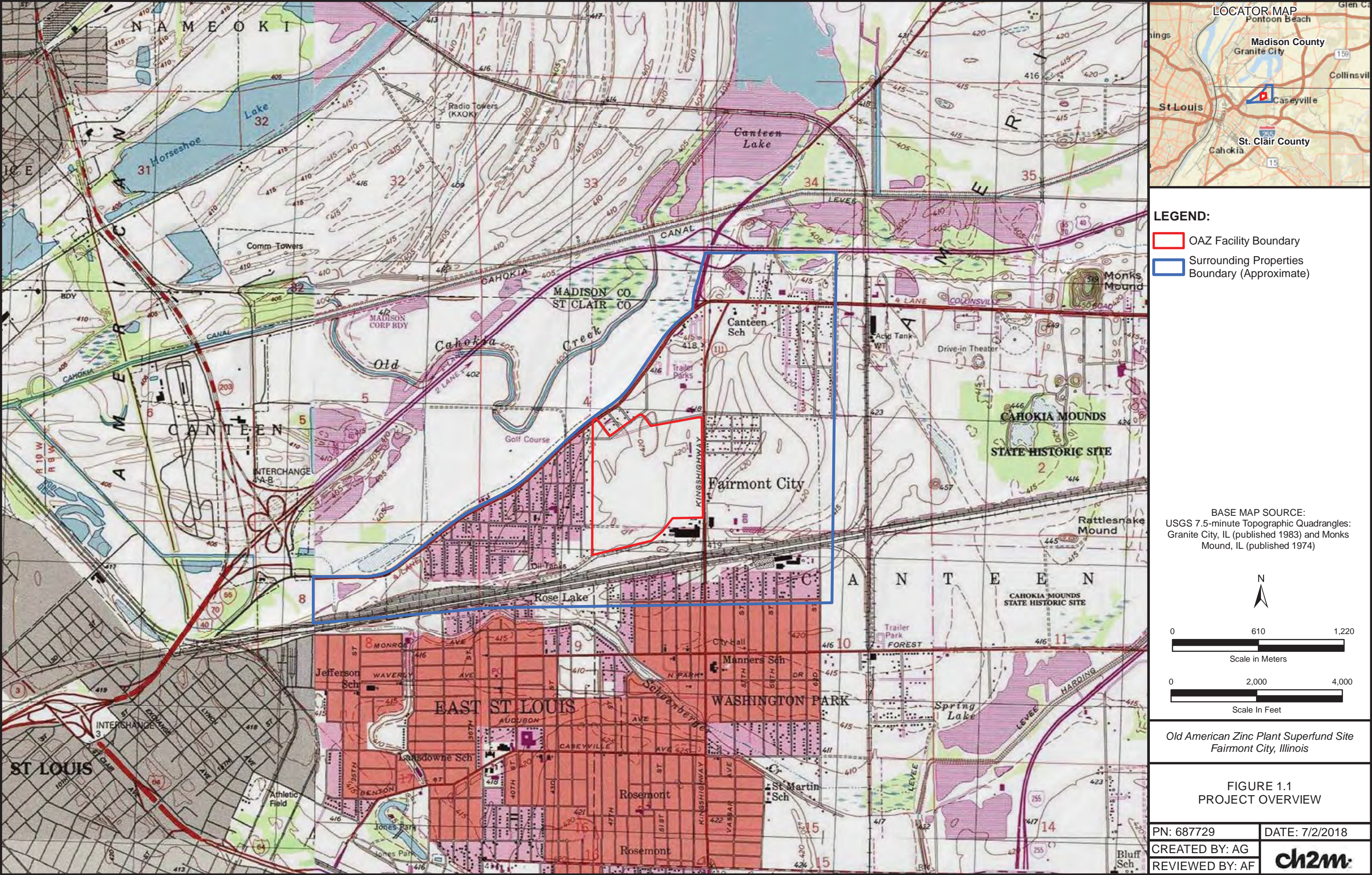
Other Interested Parties

CH2M Contact

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Figure



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OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 31 23 23
FILL AND BACKFILL

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM):
 - a. C117, Standard Test Method for Materials Finer Than 75-Micrometers (No. 200) Sieve in Mineral Aggregates by Washing.
 - b. C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
 - c. D75, Standard Practice for Sampling Aggregates.
 - d. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - e. D1556, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
 - f. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - g. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - h. D4254, Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - i. D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
 2. Illinois Environmental Protection Agency:
 - a. Illinois Administrative Code (IAC) Title 35, Part 742, Tiered Approach to Corrective Action Residential Criteria, Appendix B, Table A.
 - b. IAC Title 35, Part 1100 Illinois Clean Fill Regulations.
 3. Illinois Department of Transportation (IDOT): Manual of Test Procedures for Materials, Illinois Test Procedure 11, Materials Finer than No. 75 μ m, (No. 200) Sieve in Mineral Aggregates by Washing.

1.02 DEFINITIONS

- A. Compliance Sample: Sample collected from borrow source, which has not previously been sampled, for analyses of contaminant concentration and geotechnical parameter to confirm identification of borrow source.

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- B. Continued Compliance Sample: Sample collected from previously identified and approved borrow source.
- C. Relative Compaction:
 - 1. Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D698.
 - 2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by the Owner's Representative.
- D. Optimum Moisture Content:
 - 1. Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction.
 - 2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.
- E. Relative Density: Calculated in accordance with ASTM D4254 based on maximum index density determined in accordance with ASTM D4253 and minimum index density determined in accordance with ASTM D4254.
- F. Completed Course: A course or layer that is ready for next layer or next phase of Work.
- G. Lift: Loose (uncompacted) layer of material.
- H. Well-Graded:
 - 1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.
 - 2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
 - 3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- I. Influence Area: Area within planes sloped downward and outward at 45-degree angle from horizontal measured from:
 - 1. 1 foot outside outermost edge at base of foundations or slabs.
 - 2. 1 foot outside outermost edge at surface of roadways, shoulder, or sidewalk.
 - 3. 2 feet outside exterior at spring line of pipes or culverts.
 - 4. 3 feet outside the support loads of mobile homes.

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- J. Imported soils utilized for this project are from offsite sources and described in the classifications as follows:
1. General Backfill (minus 6 inches to maximum excavation depth, excluding areas where select topsoil will be placed in properties): as defined in this Section.
 - a. In alleyways excavated to a depth of 18 inches or more, general backfill will be placed from minus 12 inches to maximum excavation depth.
 2. Granular Fill (adjacent to, beneath, or within influence area of structures): As defined in this section.
 3. Gravel (minus 6 inches to finish grade in designated areas shown in property drawing or alleyway drawing): As defined in this section.
 4. Stabilization Rock (minus 12 to minus 6 inches) in alleyways excavated to a depth of 18 inches or more. As defined in this section.
 5. Topsoil (uppermost 6 inches of soil to be placed in areas for seeding at residential properties): As defined in Section 32 91 13, Topsoil Preparation.
 6. Select Topsoil (uppermost 18 inches [or entire excavation depth if less than 18 inches] to surface finish grade in gardens and landscaping areas): As defined in Section 32 91 13, Topsoil Preparation.
- K. Imported Material: Materials obtained from sources offsite, suitable for specified use.
- L. Standard Specifications: When referenced in this section, will mean Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
- M. Geotechnical Manual: When referenced in this section, will mean Illinois Department of Transportation Geotechnical Manual, latest edition.

1.03 SUBMITTALS

- A. Action Submittals:
1. A table describing borrow sources and a site drawing will be submitted identifying location(s) of borrow areas, and of any samples with respect to the specific borrow area at the borrow source. This will be provided by the Contractor within 5 days from Notice of Award. Owner or Owner's Representative will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.

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2. Compliance samples and continued compliance samples, as described below in paragraph 2.01 of this Section will be collected by the Owner's Representative with Contractor assistance. The Owner's Representative will submit to the Laboratory Contractor for the following analyses:
 - a. Chemical analyses of source materials (contaminants, fertility, and salinity). Chemical analyses are not required for gravel.
 - b. Gradation and standard proctor analyses of source materials:
 - 1) For gravel, provide a materials sheet from the borrow source indicating that the material meets the IDOT specifications. A gradation analysis is not required.
 - c. Contractor compaction test results.

- B. Informational Submittals: Manufacturer's data sheets for compaction equipment.

1.04 QUALITY ASSURANCE

- A. Notify Owner's Representative when:
 1. Whenever subgrade is ready for backfilling or when backfilling operations are resumed after a period of inactivity.
 2. Whenever visual indications of suspected contaminated fill are observed in the excavation. Suspected contaminated fill may consist of ash, slag, sinter, clinkers, and stained or discolored soil.
 3. Soft or loose subgrade materials are encountered.
 4. Fill material appears to be deviating from Specifications.
- B. Contractor will perform two compaction tests in place per lift per yard area, unless directed otherwise by the Owner's Representative. Locations of compaction tests will be spread out over the footprint of the area being backfilled. Owner's Representative may direct Contractor to perform additional compaction testing, at no additional cost, for quality assurance on a random basis in a manner to minimize interruption to backfill and compaction operations. The compaction tests will be performed in accordance with ASTM D698.

1.05 SEQUENCING AND SCHEDULING

- A. Complete applicable Work specified in Section 31 10 00, Site Preparation and Section 31 23 16, Excavation; prior to placing materials described in this Section.
- B. Perform Survey in accordance with Section 01 31 13, Project Coordination prior to performing Work specified under this section, if deemed necessary by Owner's Representative.

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- C. Complete Work specified in this Section after receiving authorization from Owner's Representative upon inspection of final excavation depth.
- D. Complete Work specified in this section within 7 days of the completion of excavation at a property.

PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Source quality control samples will be collected for the analyses listed in this section. If backfill materials are from different borrows or areas, separate samples will be collected and tested for each at the specified frequencies.
- B. Contractor will coordinate with Owner's Representative when identifying new borrow source(s) for imported materials to be used for backfill to ensure that compliance samples collected from the borrow source at a frequency of one sample per 1,000 cubic yards are representative of materials transported to the site. Compliance samples will be collected by the Owner's Representative with Contractor assistance.
- C. The Owner's Representative will submit the compliance samples to the laboratory for testing for the following analyses:
 - 1. Chemical analyses: target compound list (TCL) organics (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]), TCL pesticides, TCL polychlorinated biphenyls (PCBs), herbicides, and target analyze list (TAL) metals.
 - 2. Fertility and salinity will also be analyzed for topsoil samples.
- D. The Owner's Representative will collect one sample per 1,000 cubic yards of backfill material for gradation analysis and standard proctor when identifying borrow source(s) to be used for backfill. The Contractor will assist the Owner's Representative with sample collection. Samples may be collected more often as determined by Owner's Representative, if variation in gradation is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.
- E. After borrow source(s) are identified and approved, Contractor will collect continued compliance samples throughout the RA at a frequency of one sample per 1,000 cubic yards (or more often as determined by Owner's Representative) of backfill material for chemical analysis in paragraph 2.01 C.1 and D.
- F. The materials must meet the Illinois Clean Fill Operations criteria (IAC 35 Part 1100) to be determined to be "clean."

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2.02 GENERAL BACKFILL

- A. In accordance with IDOT Standard Specifications for Road and Bridge Construction, Sections 204 and 205, and in accordance with Table 8.4-1 of the IDOT Geotechnical Manual.
- B. Free from rocks larger than 3 inches, from roots, peat, and other organic matter, ashes, cinders, trash, debris, and other deleterious materials.
- C. Will not contain more than 10 percent gravel, stones, or shale particles.

2.03 GRANULAR FILL (IF REQUIRED)

- A. 1-inch minus crushed gravel or crushed rock.
- B. Free from dirt, clay balls, and organic material.
- C. Well graded from coarse to fine and containing sufficient fines to bind material when compacted, but with maximum 8 percent by weight passing No. 200 sieve.

2.04 GRAVEL

- A. Free from clods, organic matter, or other deleterious material.
- B. Provide materials in accordance with current IDOT Standard Specifications for Road and Bridge Construction, gradation CA-6.
- C. Physical Qualities: Per Section 1004 of the IDOT Standard Specifications for Road and Bridge Construction.
- D. Gradation: Per 1004 of the IDOT Standard Specifications for Road and Bridge Construction.

2.05 STABILIZATION ROCK

- A. Free from clods, organic matter, or other deleterious material.
- B. Provide materials in accordance with current IDOT Standard Specifications for Road and Bridge Construction, gradation CA-1, or alternative material approved by Owner's Representative.
- C. Gradation: Per 1004 of the IDOT Standard Specifications for Road and Bridge Construction.

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2.06 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminants, or contaminants deleterious to proper compaction.

PART 3 EXECUTION

3.01 GENERAL

- A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.
- B. This work includes transportation and installation of all materials to the project site.
- C. Stockpile and manage General Backfill, Gravel, Stabilization Rock, Topsoil, and Select Topsoil as follows:
 - 1. These materials will not be allowed to be stockpiled overnight except at the FA staging area with proper controls in place. These materials may be staged and stockpiled at the FA within approved areas. Consult with FA RA Contractor, as needed, to determine stockpile areas.
 - 2. Post signs identifying material stockpiled. Post signs that are readable from all directions of approach to each stockpile. Signs should be clearly worded and readable.
 - 3. Materials for backfilling may be temporarily stockpiled within the extent of the excavation prior to placement. Temporary stockpiles will be spread out or otherwise removed before the end of construction activities each day.
 - 4. Do not stockpile materials near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line.
 - 5. Protection against stockpile runoff will be implemented in accordance with the approved Stormwater Pollution Prevention Plan.
- D. General Backfill material within lawn areas and outside the influence area will be placed at various depth intervals up to the depth of topsoil specified in Section 32 91 13, Topsoil Preparation or other surface fill material specified in property drawing. General Backfill will be compacted to between 80 and 90 percent maximum dry density as determined by ASTM D698 (Standard Proctor) in no greater than 6-inch lifts. Compaction will not exceed 90 percent maximum dry density. The backfilled areas will be compacted in a manner that prevents differential settlement, sink holes, subsidence, etc., and will warrant against same for 1 year. All work associated with repairing backfilled areas will be the responsibility of the Contractor.

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- E. General Backfill material within alleyways will be placed in accordance with IDOT Standard Specifications for Road and Bridge Construction, Sections 204 and 205, and meet the requirements outlined in Table 8.4-1 of the IDOT Geotechnical Manual, and prepared and compacted to the satisfaction of the Owner's Representative. The backfilled areas will be compacted in a manner that prevents differential settlement, sink holes, subsidence, etc., and will warrant against same for 1 year. All work associated with repairing backfilled areas will be the responsibility of the Contractor.
- F. If General Backfill is classified as ML or CL in accordance with the Unified Soil Classification System (ASTM D2487), moisture content during placement will be within minus 3 percent to zero percent of its optimum moisture content as determined by ASTM D698.
- G. General Backfill will not be placed in excavations with standing water or unstable subgrade conditions. General Backfill will be placed in a manner that does not disturb or damage surrounding structures or utilities. The backfilled areas will be graded away from structures to suit the elevation of the surrounding area and such that there will be no ponding of water.
- H. Gravel will be placed in accordance with IDOT Standard Specifications for Road and Bridge Construction, Section 205.04 – Placing Material, and all relevant sections of Division 300 – Subgrades, Subbases, and Base Courses, and prepared and compacted to the satisfaction of the Owner's Representative.
- I. Place and spread fill and backfill materials in horizontal lifts of uniform thickness, in a manner that avoids segregation, and compact each lift to specified densities prior to placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.
- J. Place, spread, and compact cohesive backfill in alleyways using tracked machinery with a minimum weight of 12,000 pounds. Backfill will be placed in 3-inch (maximum) loose lifts. Each lift will be compacted with the tracked machinery, using multiple passes to provide full lift coverage with the machinery tracks. Backfill material will have a suitable moisture content (as detailed in Part 3.01, F) that allows placement and compaction without excessive rutting, to the satisfaction of the Owner's Representative.
- K. During filling and backfilling, keep level of fill and backfill around each structure even.
- L. Do not place backfill, if material is frozen or overly saturated, or if surface upon which backfill is to be placed is frozen or overly saturated.

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- M. Do not use sections of prepared ground surface as haul roads. Protect prepared subgrade from traffic.
- N. Maintain prepared ground surface in finished condition until next course is placed.
- O. Uniformly distribute topsoil to match surrounding grades and maintain positive drainage away from structures. Fine grade topsoil eliminating low areas or undulations of the final surface and maintaining levels, profiles, and contours of the subgrade.
- P. Settlement: Correct and repair any subsequent damage to structures, pavements, curbs, slabs, piping, and other facilities, caused by settlement of fill or backfill material.

3.02 DEMARCATION FENCING

- A. Place high-visibility fence in the bottom of the excavation at properties at the direction of the Owner's Representative.

3.03 BACKFILL ADJACENT TO ROADS, DRIVEWAYS, FOUNDATIONS AND SIDEWALKS, FACILITIES

- A. Within influence area adjacent to or beneath structures, sidewalks, slabs, pavements, curbs, piping, conduits, and other facilities, backfill with Granular Fill material approved by Owner's Representative and/or Engineer.
- B. Place fill in lifts of 6-inch maximum thickness and compact each lift to minimum of 95 percent relative compaction as determined in accordance with ASTM D698.

3.04 SITE TESTING

- A. If test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
- B. Remove material placed in Work that does not meet Specification requirements.
- C. If compaction testing does not meet Specifications or satisfaction of Owner's Representative, rework the area and retest until Specifications or satisfaction of Owner's Representative are met.

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3.05 REPLACING OVEREXCAVATED MATERIAL

- A. Replace excavation carried below grade lines shown or established by Owner's Representative with same material as specified for overlying fill or backfill.

END OF SECTION

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SECTION 32 91 13
TOPSOIL PREPARATION

PART 1 GENERAL

1.01 GENERAL

- A. This Work includes transportation and installation of topsoil and select topsoil to the project site.
- B. Topsoil is the growth medium for seed. Select topsoil is the growth medium for gardens and landscaping areas.

1.02 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. ASTM International (ASTM):
 - a. D2974, Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
 - b. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - c. D4254, Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - d. D6938, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods.
 - 2. Illinois Environmental Protection Agency:
 - a. Illinois Administrative Code Title 35, Part 742.
 - b. Illinois Administrative Code Title 35 Part 1100.
 - c. Tiered Approach to Corrective Action Residential Criteria, Appendix B, Table B.
 - 3. Illinois Department of Transportation (IDOT):
 - a. Manual of Test Procedures for Materials, Illinois Test Procedure 11, Materials Finer than No. 75 μm (No. 200) Sieve in Mineral Aggregates by Washing.
 - b. Illinois Department of Transportation 2012 Standard Specifications for Road and Bridge Construction, Section 211 Topsoil and Compost.
 - 4. AgSource Harris 'Diagnostic Test'
(<http://documents.crinet.com/AgSource-Cooperative-Services/Locations/HarrisSoil-infosheet-v2-Interactive-2014.pdf>).

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1.03 DEFINITIONS

A. Relative Compaction:

1. Ratio, in percent, of as-compacted field dry density (determined in accordance with ASTM D6938) to laboratory maximum dry density as determined in accordance with ASTM D698.
2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by Owner's Representative.

B. Optimum Moisture Content:

1. Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction.
2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.

C. Relative Density: Calculated in accordance with ASTM D698 based on maximum index density and minimum index density determined in accordance with ASTM D4253 and ASTM D4254, respectively.

D. Completed Course: A course or layer that is ready for next layer or next phase of Work.

E. Topsoil: Uppermost 6 inches of soil to be placed in areas for seeding at residential properties designed to favor seed establishment and growth. Uppermost 4 inches of soil to be placed on the excavated soil staging pile at the FA designed to favor seed establishment and growth for stabilization of the staging pile.

F. Select Topsoil: Uppermost 18 inches (or maximum excavation depth if less than 18 inches) in garden or landscaped areas, designed to favor plant establishment and growth.

G. Subsoil: All soil fill materials below the uppermost layer (topsoil, select topsoil, enhanced drainage material, or gravel) and in accordance with Section 31 23 23, Fill and Backfill.

H. Lift: Loose (uncompacted) layer of material.

I. Imported Material: Materials obtained from sources offsite, suitable for specific use.

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1.04 SUBMITTALS

A. Action Submittals:

1. Contractor will identify topsoil borrow source(s) for approval by Owner's Representative and/or Engineer. A table describing borrow sources and a site drawing will be submitted identifying the location(s) of borrow areas, and of any samples with respect to the specific borrow area at the borrow source. This information will be provided by the Contractor within 5 days from Notice of Award. Owner will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.
2. Compliance samples as described below in Part 2.01 of this Section will be collected by the Owner's Representative with Contractor assistance for the following testing:
 - a. Chemical analyses of source materials (contaminants).
 - b. Chemical analyses of source materials (basic fertility and salinity).
 - c. Gradation analyses of source materials.
3. Contractor will prepare a soil amendment plan if the AgSource Harris Turf Test results indicate amendment is necessary to support establishment of turf. The plan will including the following:
 - a. Method of amending soil, including equipment and mixing depth (if applicable).
 - b. Selected amendment with the application rate.
 - c. Soil amendment plan will be submitted within 5 work days of receipt of AgSource Harris Turf Test results.

1.05 QUALITY ASSURANCE

A. Notify Owner's Representative when:

1. Subgrade is ready for backfilling or when backfilling operations are resumed after a period of inactivity.
2. Soft or loose subgrade materials are encountered.
3. Topsoil material appears to be deviating from Specifications.

1.06 SEQUENCING AND SCHEDULING

- A. Perform Work specified in Section 31 10 00, Site Preparation; Section 31 23 16, Excavation; and Section 31 23 23, Fill and Backfill prior to performing Work specified under this section.

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- B. Complete Work specified in this section within 2 work days of the completion of backfill at a property.

PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Source quality control samples will be collected by Owner's Representative with Contractor assistance. The Owner's Representative will submit the samples for the analyses listed in this section. One compliance sample will be collected per 1,000 CY of topsoil (or more often as determined by Owner's Representative and/or Engineer), if variation in material is occurring, or if material appears to depart from Specifications. The Contractor will assist the Owner's Representative with sample collection. The Owner's Representative will submit the samples to the laboratory for testing for the following analyses:
1. Chemical analysis: target compound list (TCL) organics (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]), TCL pesticides, TCL polychlorinated biphenyls (PCBs), herbicides, and target analyte list (TAL) metals. The topsoil will meet Illinois Administrative Code Title 35, Part 1100 Clean Construction or Demolition Debris Fill Operations. .
- B. The Owner's Representative, with Contractor assistance, will collect one sample per 1,000 CY of topsoil for general fertility and salinity analyses using the AgSource Harris 'Diagnostic Test' (<https://www.agsourcelaboratories.com/Portals/11/TURF/Turf%20-%20Soil%20Analysis%20Submission-INT%20FRM-17570-18.pdf>) or equivalent when identifying borrow sources to be used for topsoil. Samples may be collected more often as determined by Owner's Representative and/or Engineer, if variation in fertility and salinity is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.
- C. The Owner's Representative, with Contractor assistance, will collect one sample per 1,000 CY of topsoil for gradation analysis when identifying borrow source(s) to be used for topsoil. Samples may be collected more often as determined by Owner's Representative and/or Engineer, if variation in gradation is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.

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2.02 TOPSOIL

- A. Topsoil will be free from objects larger than 1 inch maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.
- B. Topsoil will consist of humus-bearing soils adapted to the sustenance of plant life.
- C. Topsoil Borrow: Topsoil borrow will range from a silt loam, loam, clay loam, sandy clay loam, or sandy loam soils for general use as a turf growing medium. The Contractor will collect samples with the Owner's Representative, for gradation analysis when identifying borrow source(s) to be used for topsoil. Topsoil will meet the requirements as described below:
 - 1. Material passing No. 4 inch sieve: ≥ 85 percent.
 - 2. Sand: 10 – 75 percent passing No. 10 sieve.
 - 3. Silt: 5 – 70 percent, 0.05 – 0.002 mm diameter.
 - 4. Clay: 5 – 35 percent, less than 0.002 mm diameter.
 - 5. pH: 6.1 – 7.8.
 - 6. Organic matter – 3 to 15 percent of dry weight as determined in accordance with ASTM D2974.
 - 7. Largest materials size dimension not to exceed 2.5 inches.
- D. Select Topsoil Borrow: Select topsoil will consist mostly of a loam ranging into sandy clay loam, sandy loam, silt loam, and clay loam soils, as a plant growing medium for landscape and planting beds. The Contractor will collect samples with the Owner's Representative, for gradation analysis when identifying borrow source(s) to be used for select topsoil. Select topsoil will meet the requirements as described below. Select topsoil may be amended with peat, as needed, to obtain the required organic matter content.
 - 1. Material passing 3/4 inch sieve: 100 percent.
 - 2. Material passing No. 4 inch sieve: ≥ 90 percent.
 - 3. Sand: 15 – 60 percent passing No. 10 sieve.
 - 4. Silt: 10 – 60 percent, 0.05 – 0.002 mm diameter.
 - 5. Clay: 5 – 35 percent, less than 0.002 mm diameter.
 - 6. pH: 6.1 – 7.5.
 - 7. Organic matter – 3 to 15 percent of dry weight as determined in accordance with ASTM D2974.

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2.03 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminants, or contaminants deleterious to proper compaction.
- B. The Contractor must supply clean water for moisture conditioning. Water may not be used from the residence.

PART 3 EXECUTION

3.01 GENERAL

- A. This work includes transportation and installation of all material to the project site.
- B. Do not use sections of prepared ground surface as haul roads. Protect prepared subgrade from traffic.

3.02 TOPSOIL PLACEMENT

- A. The top 6 inches of soil for backfilled excavation areas will be topsoil with the following exceptions:
 - 1. Garden or landscaping areas shall have a minimum of 18 inches of select topsoil (unless the excavation depth is less than 18 inches, in which case the thickness of topsoil shall be equal to the excavation depth).
 - 2. Areas where gravel will be placed to final grade.
- B. Do not place topsoil or select topsoil when frozen, excessively wet, or otherwise detrimental to the Work.
- C. Topsoil and select topsoil will not be placed in standing water or with unstable subgrade conditions. Topsoil and select topsoil will be placed in a manner that does not disturb or damage surrounding structures or utilities.
- D. Topsoil and select topsoil will be placed in lifts no greater than 6-inches.
- E. Topsoil compaction will be minimized to the extent possible in all areas planned for herbaceous vegetation (e.g. lawn). All areas will be tilled with an implement designed to lift and loosen soil to a depth of 3 inches proper to performance of work under Section 32 92 00, Turf and Grasses.
- F. Select topsoil will be lightly compacted with a hand tamper, or Owner's Representative-approved equivalent from 6 inches below ground surface to maximum depth of placement.

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- G. At residential properties, topsoil will be placed in each excavated area to final grade before seeding. Fine grade topsoil, eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade.
- H. Remove stones exceeding 1 inch, roots, sticks, debris, and foreign matter during and after topsoil placement.
- I. Remove surplus topsoil from property.

3.03 SITE TESTING

- A. Amend topsoil in accordance with the reported AgSource Harris Turf Test guidelines.
- B. If chemical or gradation test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
- C. Remove material placed in Work that does not meet Specification requirements.

END OF SECTION

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SECTION 32 91 26
SITE RESTORATION

PART 1 GENERAL

1.01 SUBMITTALS

- A. Action Submittals: Inspection or testing results for existing systems.
- B. Informational Submittals:
 - 1. Manufacturer's Instructions or data sheets for replacement materials.
 - 2. Samples.

1.02 SEQUENCING AND SCHEDULING

- A. The Work of this Specification will not commence until the Owner's Representative and/or Engineer has approved materials and methods proposed for restoration.
- B. Include the Work of this Specification in the progress schedule, as specified in Section 01 32 00, Construction Progress Documentation.
- C. Site restoration will be performed after the completion of activities described in Section 32 91 13, Topsoil Preparation.
- D. Site restoration will be performed after the completion of Survey No. 3 as specified in Section 01 31 13, Project Coordination, if deemed necessary by the Owner's Representative.

1.03 TESTING

- A. Sprinkler systems, electrical, piping, and plumbing located within or near the limits of excavation will be inspected and tested as appropriate to determine if damage occurred during the remediation.
- B. Testing may include verifying the system is functional or other appropriate means.
- C. Testing will be coordinated with and observed by the Owner's Representative.

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PART 2 PRODUCTS

2.01 REPLACEMENT MATERIALS

- A. Products to match the material and finishes as the item being repaired or replaced.

PART 3 EXECUTION

3.01 GENERAL

- A. Site restoration will include reinstallation of removed obstructions, repairs to permanent structures, and repair or replacement of property disturbed or damaged during or as a result of the Contractor's construction activities.
- B. Site restoration will also include the removal of temporary controls.
- C. Restoration of plant materials is outlined in Section 32 93 00, Plants.

3.02 RESTORATION

- A. The Contractor will reinstall landscaping features or other obstructions removed from the area. Materials will be reinstalled to an equivalent or better condition. Any materials that are damaged and cannot be reinstalled will be replaced with new materials of like-kind with matching finishes as possible.
- B. The Contractor will return items to the property from storage area after reinstallation of removed fencing sections. Any items damaged by the Contractor will be repaired or replaced as directed by Owner's Representative. The condition of equipment and materials prior to removal from the property will be based on photographic and/or video documentation collected during the Initial Preconstruction Meeting as specified in Section 01 31 13, Project Coordination and the Property Inventory Log in the Preconstruction Property Checklist.
- C. The Contractor will reinstall obstructions removed prior to excavation. Materials will be reinstalled to an equivalent or better condition. Any materials that are damaged and cannot be reinstalled will be replaced with new materials of like-kind with matching finishes as possible.
- D. The Contractor will restore wetlands and other waters of the United States, if required based on input from EPA and other regulatory agencies based on the results of the wetlands and other waters delineation that Contractor performs per Section 02 24 00, Delineation of Wetlands and Other Waters of the United States.

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3.03 REPAIRS

A. Residential Property:

1. Damage to private property, including but not limited to, fencing, private utilities, and permanent structures, will be repaired by the Contractor in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Owner's Representative.
2. Repairs will be performed to an equivalent or better quality than the original. Repairs shall be made with like-kind materials with matching finishes as possible.
3. Repairs may be performed by the Contractor if qualified, or the Contractor will retain a qualified party to perform the repairs.
4. Damaged items shall be replaced by the Contractor with new undamaged items as approved by Owner's Representative.

B. County, Township, City, or Village-Owned Property:

1. The Contractor will repair sidewalks, curb and gutter, trees or other County, Township, City, or Village property damaged by the Contractor or as a result of their construction activities. Repairs shall be performed in accordance with the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, St. Clair County, Canteen Township, City of East St. Louis, and/or Village of Fairmont City Code of Ordinances, or other applicable ordinances or regulations.
2. Asphalt road surfaces will be repaired in accordance with all applicable sections of IDOT Standard Specifications for Road and Bridge Construction, Division 400, Class A-3 bituminous surface.
3. Repairs will be performed by the Contractor, if qualified, or the Contractor will retain a qualified party to perform the repairs.

C. Staging Area:

1. Damage to property, including but not limited to, fencing, private utilities, and permanent structures, will be repaired by the Contractor in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Owner's Representative.
2. Repairs will be performed to an equivalent or better quality than the original. Repairs will be made with like-kind materials with matching finishes as possible.

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- 3. Repairs may be performed by the Contractor if qualified, or the Contractor will retain a qualified party to perform the repairs.
 - 4. Damaged items will be replaced by the Contractor with new undamaged items as approved by Owner's Representative.
- D. Costs to repair or replace damaged items will be borne by the Contractor and not reimbursed by the Owner, Engineer, or Owner's Representative.

3.04 CLEANUP

- A. Temporary controls will be removed from the residential property after topsoil preparation is complete, seed has been placed and other property features have been restored.
- B. Stormwater protection and erosion and sediment control measures from the residential property, such as inlet protection, will be removed by the Contractor after the final street cleaning is performed in accordance with Section 01 50 00, Temporary Facilities and Controls.
- C. Stormwater protection and erosion and sediment control measures from the staging area, such as silt fencing, will be removed by the Contractor after all punch list items have been addressed, prior to Contractor demobilization.
- D. Debris, rubbish and excess materials will be removed from the property for storage at the staging area or disposal, as appropriate. Regulations regarding hauling and disposal will apply.
- E. Debris, rubbish, and excess materials shall be removed from the staging area at the FA, as appropriate. Regulations regarding hauling and disposal will apply.

END OF SECTION

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SECTION 32 92 00
TURF AND GRASSES

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, 2016 Version or current.

1.02 SUMMARY OF WORK

- A. Section Includes:
 - 1. Turf seeding.
 - 2. Turf renovation.
 - 3. Erosion-control material(s).

1.03 RELATED SECTIONS

- A. Section 32 91 13, Topsoil Preparation.
- B. Section 32 93 00, Plants.
- C. Section 250-Seeding, of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

1.04 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of topsoil or select topsoil.
- B. Maintenance Period: Begin maintenance immediately after each area is planted and continue for a period of 6 weeks after all planting under this section is completed, unless otherwise directed by Owner's Representative.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Topsoil: As defined in Section 32 91 13, Soil Preparation.

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- E. Steep Slopes: A slope that is equal to or greater than 1V:3H
- F. Satisfactory Stand: Lawn that has been growing in place in a live, healthy condition with:
 - 1. No bare spots larger than 2 square feet.
 - 2. Not more than 30 percent of total area with bare spots larger than 1 square foot.

1.05 SUBMITTALS

- A. Informational Submittals: Product labels/data sheets.
- B. Action Submittals:
 - 1. Seed mixture.
 - 2. Seed: Certification of seed analysis, germination rate, and inoculation:
 - a. Certify that each lot of seed has been tested by a testing laboratory certified in seed testing, within 6 months of date of delivery.
Include with certification:
 - 1) Name and address of laboratory.
 - 2) Date of test.
 - 3) Lot number for each seed specified.
 - 4) Test Results: (i) name, (ii) percentages of purity and of germination, and (iii) weed content for each kind of seed furnished.
 - b. Mixtures: Proportions of each kind of seed.
 - 3. Description of required maintenance activities and activity frequency.
 - 4. Maintenance plan and schedule, identifying labor, equipment and materials to be used.
 - 5. Daily log of maintenance activities, submitted per Section 01 33 00, Submittal Procedures. Daily log will identify, at a minimum, activities performed, date, and property address with yard areas. Submit daily.
 - 6. Product Certificates: Fertilizers, from manufacturer.
 - 7. Erosion control blanket: Product label and manufacturer's application instructions specific to Project.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable. Keep dry during storage.

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B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing vegetated areas or plants.
2. Provide erosion control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.07 WEATHER RESTRICTIONS

- A. Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.
- B. Seed will not be placed when the ground is frozen or overly saturated.

1.08 SEQUENCING AND SCHEDULING

- A. Prepare topsoil as specified in Section 32 91 13, Topsoil Preparation, and complete work specified in Section 32 93 00, Plants, before starting Work of this section.
- B. Complete work under this section within 2 calendar days of completion of topsoil and following topsoil surface inspection by the Owner's Representative.
- C. Notify Owner's Representative at least 3 days in advance of start of planting activity.
- D. Planting Season: per manufacturer's recommendation.

1.09 MAINTENANCE

- A. Contractor will furnish and apply water to seeded areas during maintenance period to establish grass. Water will be provided by the Contractor. The use of homeowner water supplies for turf maintenance is not permitted.
1. Watering: Keep surface moist.
 - a. Moist soil looks and feels damp but does not appear wet. Particles of moist soil remain unified and can be formed into a small sphere before crumbling apart.

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- b. At appearances, soil may not appear moist; however, moist soil properties must be exhibited a minimum of one half inch below soil surface throughout maintenance period.
 - c. Soil must not become saturated and plants must not become inundated.
- 2. Reseed in unsatisfactory areas or portions thereof at the end of the maintenance period if satisfactory stand has not occurred prior to October 15. After October 15, reseed and cover with erosion control blanket. Reseeded areas will be watered for an additional 6-week maintenance period, or to Owner Representative's satisfaction.

PART 2 PRODUCTS

2.01 SEED

- A. Fresh, clean new-crop seed that complies with the tolerance for purity and germination established by Official Seed Analysts of North America.
- B. Seed Mixtures:
 - 1. Properties: Class 1, Lawn Mixture, as specified in Section 250-Seeding, of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

| | |
|---------------------|-------------|
| Kentucky Bluegrass | 100 lb/acre |
| Perennial Ryegrass | 60 lb/acre |
| Creeping Red Fescue | 40 lb/acre |
 - a. Products:
 - 1) IDOT Class 1 Lawn Mixture.
 - 2) Or approved equivalent.
 - 2. Excavated soil staging pile at the FA: Seed mix for disturbed sites and steep slopes that provides erosion control and placed seed will withstand winter and will germinate and grow in subsequent spring.
- C. The seed will meet acceptable varieties, purity, and germination requirements as specified for the plant species in the mixture in Section 250 – Seeding, of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.
- D. Alternate seed mixes may be considered if requested by the Property Owner or recommended by the manufacturer due to the growing season. The Owner's Representative will review alternate seed mixes for acceptability and approve as appropriate.

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- E. All seed will conform to the latest seed law of the State, including those governing labeling and weed seed tolerances. Tolerances for Germination and Purity, as determined by the Department of Agriculture, will only apply to seed that has been previously tested and approved by the Department of Agriculture as a seed lot. Test for germination and viability must have been made within 9 months of the date of installation.
- F. All bags of seed will be labeled with the mixture number and the vendor from which it was obtained. All seed not planted within 9 months after it has been tested for germination will be sampled and retested before use, at no cost to the Owner, Engineer, or Owner's Representative.

2.02 EROSION CONTROL MATERIALS

- A. Erosion Control Blanket: Biodegradable, after minimum of 7 months, wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended biodegradable staples, minimum 6 inches long.
 - 1. Apply in areas with steep slopes.
- B. Straw Mulch: Pine straw mulch in 1 inch to 2-inch depths on slopes less than 1V:3H for permanent seed applications or temporary erosion control when season or whether conditions prevent seeding activities for 30 days or more.
 - 1. Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
 - 2. Apply on slopes less than 1H:3V.
- C. Wood Cellulose Fiber Hydroseeding Mulch:
 - 1. Specially processed wood fiber containing no growth or germination inhibiting factors.
 - 2. Add as tracer, at rate of 150 pounds per acre.
 - 3. Dyed a suitable color to facilitate inspection of material placement.
 - 4. On an air-dry weight basis, the wood cellulose fiber will contain a maximum of 10 to 15 percent moisture plus or minus 3 percent, at the time of manufacturer.
 - 5. Manufactured such that after addition and agitation in slurry tanks with water, the material fibers will become uniformly suspended to form homogenous slurry.
 - 6. When hydraulically sprayed on ground, material will allow absorption and percolation of moisture.

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7. The wood cellulose fiber will be manufactured so that:
 - a. After addition and agitation in slurry tanks with fertilizers, grass seed water, and other approved additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry.
 - b. When hydraulically sprayed on the ground, the material will form a blotter like cover impregnated uniformly with grass seed.
 - c. Mulch will be applied at the rate recommended by the manufacturer. The contractor will supply literature and a signed statement to the Owner's Representative verifying the rate of application.

2.03 TACKIFIER

- A. Derived from natural organic plant sources containing no growth or germination-inhibiting materials.
 1. Capable of hydrating in water, and to readily blend with other slurry materials.
 2. Manufacturers and Products:
 - a. Chevron Asphalt Co.; CSS 1.
 - b. Terra; Tack AR.
 - c. J Tack; Reclamare.

2.04 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium.
- C. Meeting requirements from Certified Topsoil Analysis Report identified in Section 32 91 13, Topsoil Preparation.
- D. Apply at recommended nutrient types and levels, as well as application rates recommended by soil lab analysis. Lab to provide recommended levels for all nutrient types to Contractor and/or Owner's Representative prior to fertilizer and amendment product submittals if deficiencies are present in soil.

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2.05 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material is present.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If foreign or deleterious material is present in soil, within planting area, remove the material and/or soil and replace with new topsoil.

3.02 SEED AREA PREPARATION

- A. Properties to be Seeded:
 - 1. Protect structures, utilities, sidewalk, pavements, and other facilities, along with trees, shrubs and plantings from damage caused by planting operations.
 - 2. General: Prepare planting area for soil placement and mix topsoil according to Section 32 91 13, Soil Preparation.

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3. Placing Topsoil: Place stockpiled and imported topsoil in all areas to be seeded. Soil amendments, if required per site soil analysis, will be added at recommended rates and blended with soil in place prior to seed installation.
 4. Seeding will occur after the installation of trees, shrubs, and perennials, and finished grading is complete.
 5. Moisten prepared area before planting if soil is dry. Do not inundate soils to ponding conditions. If ponding occurs, allow water to fully percolate through soil before planting.
 6. Disturbances in finished grading, such as tire runnels, will be smoothed and finely graded prior to any erosion control fabric, mulch, or seed installation.
- B. Excavated Soil Staging Pile at the FA: Prepare area to be seeded as indicated in paragraph 3.02.A Properties to be Seeded. Seed staging pile as directed by Owner's Representative. Maintain as needed to establish and maintain satisfactory stand.

3.03 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- B. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not inundate soil and create muddy conditions.

3.04 SEEDING

- A. Start within 2 days of topsoil preparation completion.
- B. The seed will be sown in accordance with Section 250 – Seeding, of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, unless another method is approved by the Owner's Representative.

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- C. Seed will be sown on a prepared surface by hydroseeding or mechanically seeding prior to applying mulch.
 - 1. For mechanically seeding, evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
 - 4. Do not broadcast or drop seed when wind velocities exceed 5 mph.
- D. Application rate: 200 lb/acre for Class 1 Lawn Mixture, or in accordance with Section 250 – Seeding, of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.
- E. For hydroseeding, a tracer will be added to the water in the hydroseeder tank to visually inspect the uniformity of the seed application.
- F. Apply hydroseeding on moist soil, only after free surface water has drained away.
- G. Prevent drift and displacement of mixture into other areas when applying hydroseed.
- H. Upon application, allow absorption and percolation of moisture into ground.
- I. Fertilizer may be applied with the mulch and tackifier if desired and if approved by the seed supplier. Apply within 30 minutes of mixing to prevent fertilizer from burning seed.
- J. Mulching: Apply hydro-mulch in accordance with Sections 250 and 1081.06 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.
 - 1. The water to bale ratio will be in accordance with the manufacturer's instructions.
 - 2. Using the color of the material as a metering agent, the slurry will be uniformly sprayed on the prepared seedbed.
- K. Seeding activities will occur on moist soil within soil staging pile area on or after October 15 only after free surface water has drained away.

3.05 EROSION CONTROL MEASURES

- A. Place erosion control measures on the specified areas within 24 hours after sowing the seed on that area.

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- B. Roll out or lay blankets parallel to the direction of water flow, with netting on top.
- C. Spread blankets evenly, without stretching, so the fibers are in direct contact with the soil over the entire area. Provide even coverage of straw mulch over mechanically seeded areas so mulch has even contact with soil below.
- D. Adjacent strip edges will overlap each other at least 4 inches. Strip ends will overlap each other at least 7 inches.
- E. If necessary, cut mat to size with scissors or sheers.
- F. For steep slopes and ditches, bury leading edge at top of slope in a 6-inch by 6-inch trench to prevent water from getting under the mat.
- G. Immediately after installation, gently water area thoroughly, wetting both top mat or straw mulch, and the underlying soil.
- H. Blanket stakes will degrade naturally as grass becomes established.

3.06 SEED MAINTENANCE

- A. Maintain and establish turf by watering, weeding, trimming, reseeding, and performing other operations as required to establish a healthy, viable turf stand. Roll, regrade, and reseed bare or eroded areas and re-mulch. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
 - 4. Watering: Keep surfaces moist.
 - 5. Washouts: Repair by filling with topsoil, fertilizing and amending (if necessary), seeding, and mulching.
 - 6. Mulch: Replace wherever and whenever washed or blown away.
 - 7. Mowing: Mow to 2 inches after grass height reaches 3 inches and mow to maintain grass height from exceeding 3-1/2 inches.
 - 8. Protection Fences: Repair and maintain until satisfactory stand of grass is established.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

9. Reseed unsatisfactory areas or portions thereof immediately at the end of the maintenance period if a satisfactory stand has not been produced.
10. Reseed/replant entire area if satisfactory stand does not develop by July 1 of the following year.

3.07 PROTECTION

- A. The Contractor is responsible for the proper care of the planted areas during the grass establishment period.
- B. Newly seeded areas will be protected against traffic or other use by enclosing the area with warning tape or other approved barrier.

3.08 REPAIR

- A. If at any time before final acceptance of the entire work covered by this contract, any portion of the surface becomes gullied or otherwise damaged following seeding, dies due to lack of water, becomes rutted due to improper protection, has been winter-killed or otherwise damaged or destroyed, the affected portion will be repaired to re-establish the condition and grade of the soil prior to hydroseeding and will then be re-seeded as specified hereinbefore by the Contractor, at no addition cost to the Owner, Engineer, or Owner's Representative.

3.09 FIELD QUALITY CONTROL

- A. At the end of the 6-week Maintenance Period, Owner's Representative and Contractor will inspect Limits of Work.
 1. At the direction of Owner's Representative, if a satisfactory stand has not been established, Contractor will re-seed and maintain at Contractor's expense. Payment will be made for satisfactory stand.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 32 93 00
PLANTS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Association of Nurserymen (AAN): Z60.1, Nursery Stock.
2. Hortus Third, Liberty Hyde Bailey, Hortorium, 1976.

1.02 DEFINITIONS

A. Measurement:

1. For Trees: In size grading Balled and Burlapped (B & B), caliper takes precedence over height.
2. For Trees: Measure trunk diameter at breast height (DBH), which is 4 feet above ground.
3. For Trees and Shrubs: For multi-stem or evergreen trees, measure size of container-grown stock by overall height. For shrubs, measure size of container-grown stock by height and spread.
4. For Perennials and Grasses: Measure herbaceous perennials pot size, not top growth. Roots should not consume more than 50 percent of the root ball.

1.03 SUBMITTALS

A. Action Submittals:

1. Pre-Selected Plant materials source list: Contractor will develop and submit a list of trees, shrubs and perennials that are readily available at local nurseries and appropriate for the region with the recommended available sizes.
2. Product data on manufactured products specified.

B. Informational Submittals:

1. Maintenance Data: Instructions for storage, planting, fertilizing, care, and maintenance of each type of plant for 1-year period in climate and location of the Project.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Cover plants during shipment with a tarpaulin or other suitable covering to minimize drying or ship in box van.
- B. B & B Plant material: Wrap each ball firmly with burlap and securely bind with twine, cord, or wire for shipment and handling. Drum-lace balls with a diameter of 30 inches or more.
- C. As specified herein for transplanting.

1.05 SPECIAL WARRANTY

- A. Replace defective trees, shrubs, and perennials with new material free of dead or dying branches and branch tips, and bearing foliage of a normal density, size, and color. Closely match new tree, shrub, and perennial in growth and form to adjacent specimens of the same species and meet requirements of this Specification. Plant material that appears chlorotic (yellowing or browning of leaves), shows evidence of disease, wilt, or has lost a minimum of 25 percent of its leaves during the normal growing season are considered defective.
- B. Plants damaged or lost due to vandalism by others are not subject to this special warranty.

1.06 MAINTENANCE

- A. Begin maintaining newly installed material immediately after planting and maintain for the period specified for "Maintenance Period" in Section 32 92 00, Turf and Grasses.
- B. In accordance with accepted Submittal on care and maintenance of plants and as follows:
 - 1. Maintain by watering, pruning, cultivating, and weeding as required for healthy growth.
 - 2. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position, if required.
 - 3. Maintenance and fertilizer requirements as specified in Informational Submittal.
 - 4. Maintenance includes temporary protection fences, barriers, and signs as required for protection. Protection fences and barriers shall not be moved or shifted until they are removed at Substantial Completion.
 - 5. Coordinate watering to provide deep root watering to newly installed trees.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- C. Replace plants exhibiting signs of drought or inundation, such as wilting or discoloration at the end of the 6-week maintenance period. Contractor will water and maintain replaced plants for a 6-week maintenance period, until Owner Representative's acceptance is obtained.

1.07 SCHEDULING AND SEQUENCING

- A. Planting Season:
 - 1. Spring Planting: March 30 to June 1.
 - 2. Fall Planting: August 30 to November 30.
 - 3. If planting cannot be completed within the planting season, alternate plants (as approved by the Property Owner) will be substituted when possible, or plants will be added to the punchlist for later restoration.
- B. Plant trees, shrubs, and perennials after final topsoil grades are established and before placement of seed.
- C. Seed application will commence within one day after tree, shrub, and perennial material installation.

PART 2 PRODUCTS

2.01 PLANT MATERIALS

- A. Provide quantity, size, genus, species, and variety of trees and shrubs indicated; comply with applicable requirements of AAN Z60.1.
- B. Nomenclature (Names of Plants): In accordance with "Hortus Third".
- C. Quality and Size:
 - 1. Nursery-grown, habit of growth normal for species.
 - 2. Sound, healthy, vigorous, and free from insects, diseases, and injuries.
 - a. Single Stem Trees shall have one strong central leader. Canopy shall be uniform and healthy in shape, typical of species and shall not be limbed up or pruned to reach desired form. Bark shall be uniform and not show signs of injury.
 - b. Multi-Stem Trees shall be uniform in shape and form. Branching habit shall be typical for the species and bark shall be uniform without signs of injury.
 - c. Shrubs shall be uniform in shape and form for the species. Bark shall not show signs of injury.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- d. All plant material shall not be root bound in containers. Roots shall not consist of more than 50 percent of root ball in the container.
 - e. All plant material shall not have girdled roots.
 - 3. Equal to or exceeding measurements specified in plant list. Measure plants before pruning with branches in normal position.
 - 4. Root System of Container-Grown Plants: Well developed and well distributed throughout the container, such that the roots visibly extend to the inside face of the growing container.
 - 5. Perform necessary pruning at time of planting.
 - 6. Sizes: Dimensional relationship requirements of AAN Z60.1 for kind and type of plants required.
 - 7. Balled and Burlapped Plants: Firm, intact ball of earth encompassing enough of the fibrous and feeding root system to enable full plant recovery.
 - a. Ball Size: AAN Z60.1.
 - 8. Container-Grown Plants: Self-established root systems, sufficient to hold earth together after removal from container, without being root bound.
 - a. Stock: Grown in delivery containers for at least 6 months but not over 2 years.
 - 9. Label tree and shrub of each variety with securely attached waterproof tag bearing legible designation of botanical and common name.
- D. Replacement Trees, Shrubs, and Perennials: Same species and quantity as specified for plant being replaced except:
 - 1. Species that are at risk due to current or anticipated diseases or infestations in the foreseeable future (i.e., Dutch Elm disease or Emerald Ash tree borer).
 - 2. Replace existing trees removed as part of the work with 2-inch caliper.
 - 3. Exotic species not readily available at local nurseries will be managed on property-specific basis with the property owner.

2.02 ANTIDESICCANT

- A. Provide transpiration retarding material to be used where any plant material is moved during the growing season.
- B. Products (or approved equivalent):
 - 1. Foliguard®.
 - 2. Wiltpruf®.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

2.03 STAKING, AND WRAPPING MATERIALS

- A. Wood Stake: 2 inches by 2 inches by 8 feet.
- B. Guy Wires: Galvanized, 12-gauge, ductile steel.
- C. Hose: Two-ply, reinforced rubber garden hose, not less than 1/2-inch diameter, new or used.
- D. Tree Ties: No. 4 chain lock tree ties.
- E. Wrapping Material: Heavy crepe paper.
 - 1. Burlap of first quality, minimum 8 ounces in weight, not less than 6 inches nor more than 10 inches in width.

2.04 MULCH

- A. Recycled hardwood (chipped or shredded), free from noxious weed seed and foreign material harmful to plant growth.
- B. Chipped or shredded trees from the site cannot be used as mulch.
- C. Depth: 3 inches.

2.05 ROCK MULCH

- A. Inorganic mulch such as lava rock, river rock, quartz, limestone or other material to match the mulch at the property prior to construction.
- B. Depth: 3 inches.

2.06 PEAT MOSS

- A. Composition: Natural residue formed by decomposition of reeds, sedges, or mosses in a freshwater environment, free from lumps, roots, and stones.
 - 1. Organic Matter: Not less than 90 percent on a dry weight basis.
- B. Moisture Content: Maximum 65 percent by weight at time of delivery.

2.07 HERBICIDE

- A. Selective, pre-emergent, surface-applied at manufacturer's recommended rate.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

B. Products (or approved equivalent):

1. Surflan.
2. Casoron.

2.08 PLANTING SOIL MIX

- A. Proportion by Weight: 3/4 approved Topsoil with 1/4 approved organic matter (peat moss).

2.09 FERTILIZER

- A. Commercial, complete, of neutral character; in granular, packet, or pellet form, 35 to 80 percent of nitrogen slow release.
1. Minimum: 10 percent available nitrogen, 3 percent to 5 percent phosphoric acid, and 3 percent to 5 percent soluble potash.
- B. Organic fertilizer when requested by property owner and as directed by the Owner's Representative.

PART 3 EXECUTION

3.01 LOCATION OF PLANTS

- A. Locate new planting in same location as removed plant or otherwise directed by Owner's Representative to address Property Owner concerns.
- B. Locate no planting, except ground cover, closer than 18 inches to pavements, pedestrian pathways, and 36 inches to structures unless replacing plant that was previously located there.
- C. Request Owner's Representative to observe locations and adjust as necessary before planting begins if alternate plant locations were requested by the Property Owner.
- D. Planting of trees and shrubs shall be as specified herein and shown on Standard Details:
1. 3293-612, Small Tree Planting.
 2. 3293-614, Tree Planting on Slope.
 3. 3293-630, Shrub Planting from Container.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

E. Ground Cover Beds:

1. Mix amendments and fertilizer with top soil prior to placing or apply on surface of top soil and mix thoroughly before planting.
2. Scarify top soil to a depth of 4 to 6 inches.
3. Establish finish grading of soil. Rake areas to smooth and create uniform texture and fill depressions.
4. Moisten.

3.02 PREPARATION

A. Planting Soil: Delay mixing of amendments and fertilizer if planting will not follow preparation of planting soil within 2 days. Do not mix or amend when soils are saturated or frozen. For pit and trench type backfill, mix planting soil prior to backfilling and stockpile at Site.

B. Trees, Shrubs, and Perennials:

1. Pits, Beds, and Trenches: Excavate with vertical and scarified sides.
2. B & B Trees and Shrubs: Make excavations at least twice as wide as root ball.
3. Container-Grown Stock: Excavate as specified for B & B stock, adjusted for size of container width and depth.
4. Bare-Root Trees: Excavate pits to a width to just accommodate roots fully extended and depth to allow uppermost roots to be just below original grade.
5. Fill excavations with water and allow to percolate out prior to planting.

3.03 PLANTING

- A. Plant trees before planting surrounding smaller plants. Adjust plants with most desirable side facing toward the prominent view (sidewalk, building, street).
- B. B & B Plants: Place in pit by lifting and carrying by its ball (do not lift by branches or trunk). Lower into pit. Set straight and in pit center with tip of rootball 1 to 2 inches above adjacent finish grade.
- C. Bare-Root Plants: Spread roots and set stock on cushion of planting soil mixture. Set straight in the pit center so that roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below finish grade. Cover roots of bare-root plants to the crown.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- D. Container-Grown Plants: Remove containers, slash edges of rootballs from top to bottom at least 1-inch deep. Plant as for B & B plants.
- E. Ground Covers: Dig planting holes with one of the following: hand trowel, shovel, bulb planter, or hoe. Split biodegradable pots or remove non-biodegradable pots. Root systems of all potted plants shall be split or crumbled. Plant so roots are surrounded by soil. Set potted plants so pot top is even with existing grade.
- F. Transplants: The Property Owner may have removed existing plants prior to excavation and removal by the Contractor. The Property Owner is solely responsible for the planting and care of transplanted plants.

3.04 BACKFILLING

- A. Backfill with planting soil mix as specified in Article 2.08.
- B. B & B Plants:
 - 1. Partially backfill pit to support plant. Remove burlap and binding from sides and tops of B & B plants. Do not pull burlap from under balls.
 - 2. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill to eliminate air pockets even if it is raining. Finish backfilling pit sides.
 - 3. Never cover top of rootball with soil. Rootball shall be installed with top of root ball at or 1-inch above finish grade.
- C. Bare-Root Plants:
 - 1. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots.
 - 2. Set original soil line of plant 1 inch to 2 inches above adjacent finish landscape grades. Spread out roots without tangling or turning up to surface. Cut injured roots cleanly; do not break.
 - 3. Carefully work backfill around roots by hand; puddle with water until backfill layers are completely saturated.

3.05 STAKING, AND WRAPPING

- A. Support trees that cannot stand alone, immediately after planting to maintain plumb position.
- B. Staking: Support deciduous trees 2 inches in caliper or less with stakes spaced equally about each tree.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

3.06 FERTILIZER

- A. Add as top dressing depending on plant size and manufacturer's recommendation.

3.07 MULCHING

- A. Cover planting beds around each plant with a 3-inch depth layer of selected mulch within 2 days after planting. Saturate planting area with water. Mulch shall not cover root flare and shall not be installed within 2-3 inches of root flare.
- B. Wood mulch will be used except where rock mulch was present prior to construction. Rock mulch may be either existing mulch removed during site preparation or new mulch consistent in appearance.
- C. Place a 3-inch layer of mulch under the drip zone of conifers that remained within the excavation area after restoring to grade with topsoil.

3.08 WEED CONTROL

- A. Maintain a weed-free condition within planting areas during maintenance period. With Property Owner approval, apply pre-emergent selective herbicide to mulched beds at manufacturer's recommended rate of application.

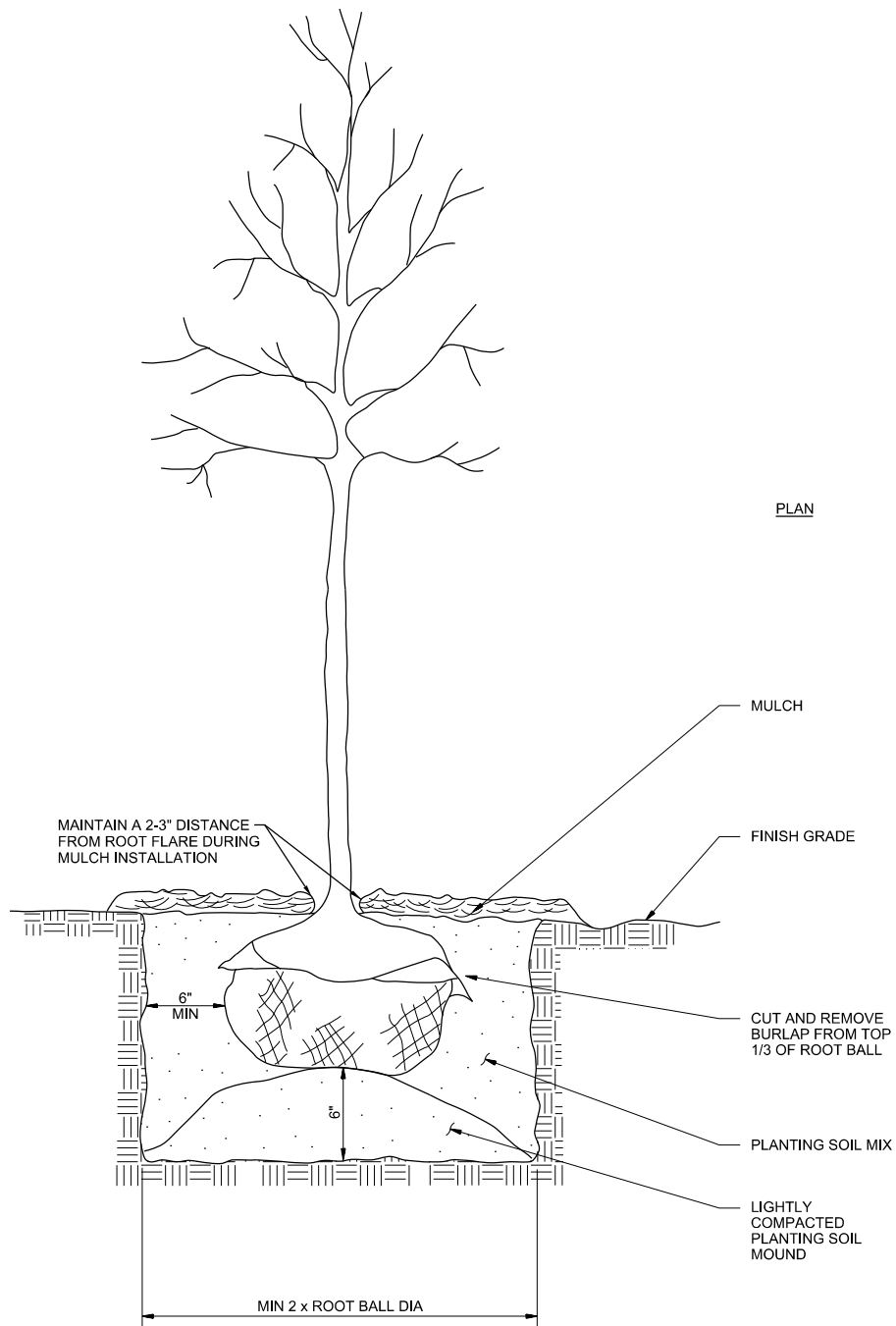
3.09 SUPPLEMENT

- A. The supplements listed below, following "End of Section," are a part of this Specification:
 - 1. Template: Plant Listing.
 - 2. Standard Detail 3293-612, Small Tree Planting.
 - 3. Standard Detail 3293-614, Tree Planting on Slope.
 - 4. Standard Detail 3293-630, Shrub Planting from Container.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

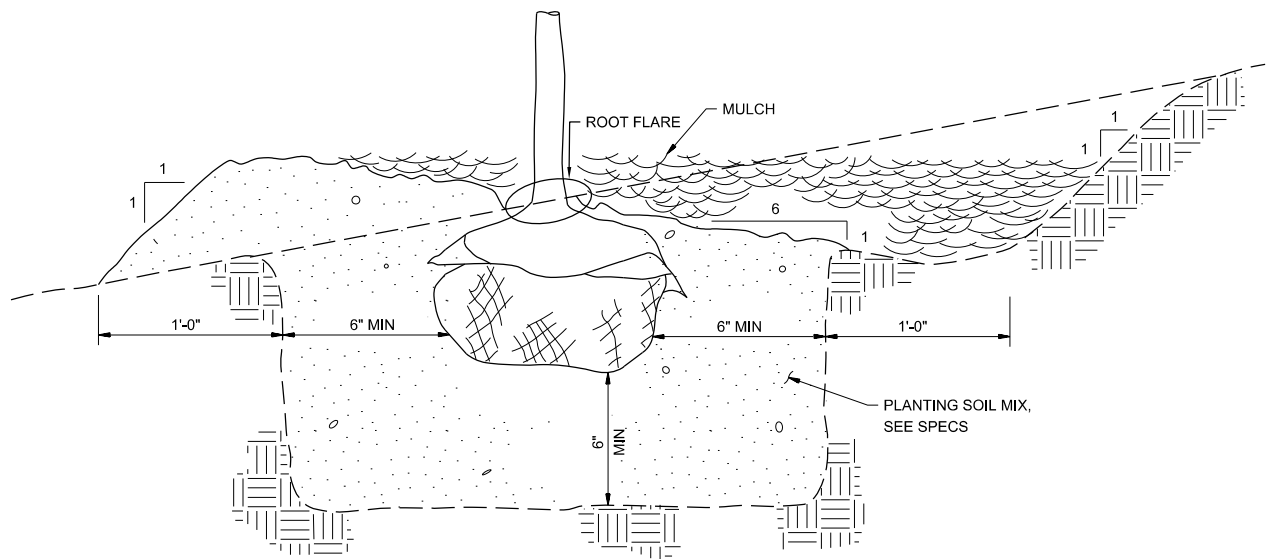
| Plant Listing | | | | |
|---------------|------|-------|---------|---------|
| Quantity | Size | Genus | Species | Variety |
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NOTE:

TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS GRADE.

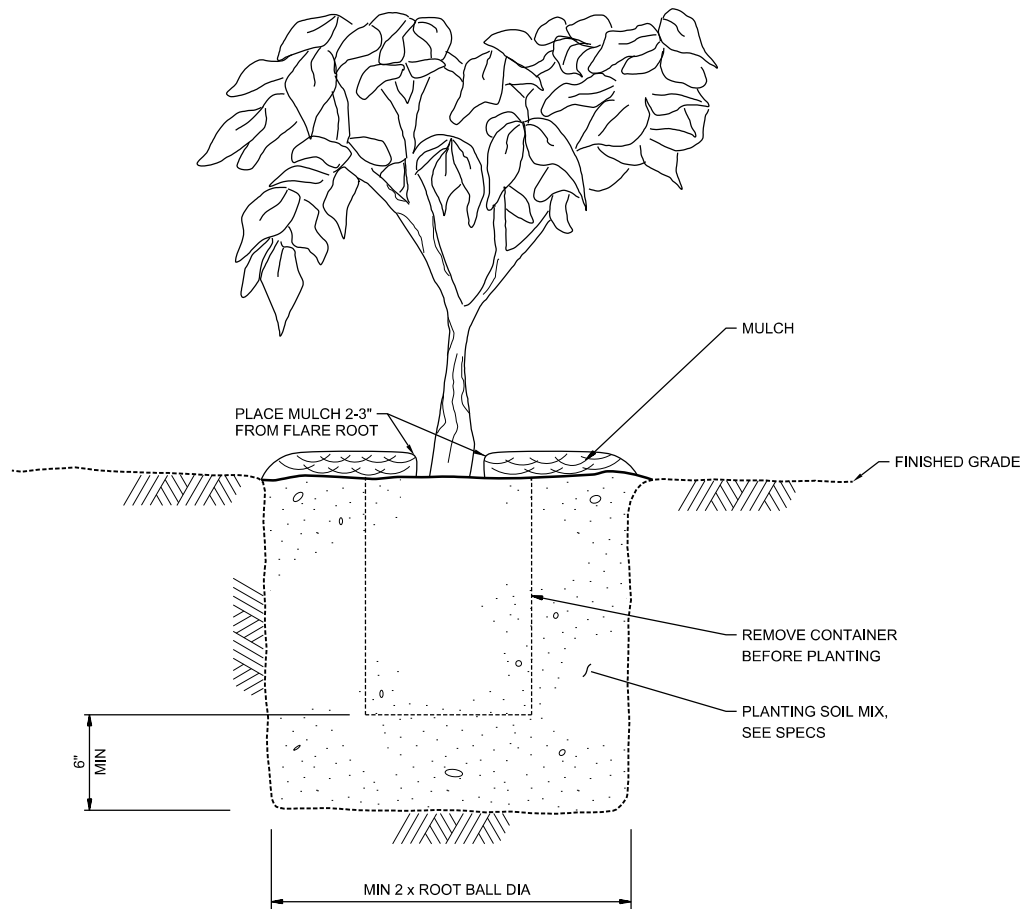
DETAIL 3293-612
SMALL TREE PLANTING
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



NOTE

ROOT FLARE SHOULD NOT BE COVERED WITH SOIL OR MULCH. MAINTAIN 2-3" OF MULCH AWAY FROM THE ROOT FLARE OF THE ROOT BALL. PLANTING SOIL SHOULD NOT COVER ROOT FLARE.

DETAIL 3293-614
TREE PLANTING ON SLOPE
 OLD AMERICAN ZINC SUPERFUND SITE
 FINAL DESIGN SUBMITTAL DECEMBER 2018
 REVISION - 1



DETAIL 3293-630 SHRUB PLANTING FROM CONTAINER

OLD AMERICAN ZINC SUPERFUND SITE
FINAL DESIGN SUBMITTAL DECEMBER 2018
REVISION - 1

Appendix C

Construction Quality Assurance Plan

Old American Zinc Plant Superfund Site

Fairmont City, St. Clair County, Illinois

Surrounding Properties Remedial Design

WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



December 2018

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Acronyms and Abbreviations

| | |
|---------|---|
| 3POC | Three Phases of Control |
| AHA | activity hazard analysis |
| bgs | below ground surface |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CM | construction manager |
| COC | chemical of concern |
| CQAP | construction quality assurance plan |
| CQM | construction quality manager |
| DFOW | definable feature of work |
| EM | environmental manager |
| EPA | U.S. Environmental Protection Agency |
| FA | Facility Area |
| FS | feasibility study |
| HASP | health and safety plan |
| HSM | health and safety manager |
| HSSE | health, safety, security, and environment |
| M&TE | measuring and test equipment |
| mg/kg | milligrams per kilogram |
| OAZ | Old American Zinc |
| ORR | Operational Readiness Review |
| PCG | preliminary cleanup goal |
| PM | project manager |
| PRP | potentially responsible party |
| QA | quality assurance |
| QC | quality control |
| RA | remedial action |
| RD | remedial design |
| RFI | request for information |
| RI | remedial investigation |
| ROD | Record of Decision |
| SM | site manager |
| SSC | site safety coordinator |
| TBD | to be determined |
| Village | Village of Fairmont City |
| WAM | work assignment manager |
| XRF | X-ray fluorescence |
| XTRA | XTRA Intermodal, Inc. |

Introduction

The purpose of the construction quality assurance plan (CQAP) is to provide the quality processes and procedures for work conducted in the properties surrounding the facility area (FA) of the Old American Zinc (OAZ) Plant Superfund Site in St. Clair County, Illinois (surrounding properties). This CQAP specifically addresses remedial action (RA) construction activities aimed at the removal of soil at a minimum of 67 properties and 9 alleyways in accordance with Work Assignment No. 224-RDRD-B5A1, under Contract No. EP-S5-06-01, as directed by the U.S. Environmental Protection Agency (EPA). The CQAP includes processes and procedures for the following activities:

- Observing construction and restoration activities
- Sampling and testing protocol
- Complying with substantive requirements of permits
- Documenting that construction and restoration have been completed in general accordance with the plans and specifications and with quality assurance (QA) procedures outlined in this plan

1.1 Site Description

The OAZ Plant Superfund Site, is located in the Village of Fairmont City (Village) in St. Clair County, Illinois (Figure 1-1). The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east.

1.2 Site History

OAZ conducted zinc-smelting operations at the FA from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stockpiles originally encompassed an area of 15 acres. The FA, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the FA until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to buildup and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA covers an area of 125 acres with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Site investigations conducted since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed a remedial investigation (RI) and feasibility study (FS) for the site in 2012 and identified contaminants in different media that included slag stock piles, ground slag that was used as fill material, and high metal concentrations in shallow groundwater in the FA. The impacted surrounding areas include residential, commercial, and vacant properties and Village alleyways and drainageways that were contaminated with runoff from the facility. Ground slag was also transported to offsite properties by local businesses, residents, and the Village for surfacing village alleyways and used as fill material in residential properties (ENTACT 2012). Most of the impacted properties are located to the west of the site, with small pockets of trailer parks and residential developments to the north, south, and east.

EPA, under the provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), conducted a Time-Critical Removal Action from 2002 to 2003. A total of 462 offsite properties were sampled during the Time-Critical Removal Action, of which 209 properties were found to have lead concentrations above the Remedial Action Level of 400 parts per million. Impacted soil was removed

from 152 properties, with the remaining properties to be addressed under future RA. Following the completion of the RI/FS in 2012, a Record of Decision (ROD) was issued by EPA detailing the selected remedial approach for the site. EPA entered into an Administrative Order on Consent with the potentially responsible party (PRP) in August 2014 to perform the remedial design (RD) work. The PRP was tasked with performing the RD work, and a draft final RD report (consisting of the report, selected drawings, but no technical specifications) was submitted to EPA in April 2016. Due to bankruptcy proceedings in April 2016, the PRP ceased performing additional work at the site. As a result, EPA took control of the site to complete the RD.

1.3 Project Goals and Objectives

EPA's selected remedy for the site is Alternative 4A, as described in the ROD (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The selected remedy for the surrounding properties involves removal of source material (slag used as fill) and contaminated soil from the identified residential, commercial/industrial, vacant properties, or Village alleyways above the applicable residential or commercial/industrial human health cleanup levels. The properties will be backfilled with imported fill that meets project specifications and restored to pre-excavation conditions. During the RA, excavated soil from the surrounding properties and alleyways will be consolidated within a 35-acre consolidation area located in the southern portion of the FA, which is part of the remedy at the FA. Depending on the RA sequencing, the excavated material may be stockpiled at the FA for placement into the consolidation area at a later date.

Soil removal and transport to the FA will be performed as follows:

- Soils from residential, commercial/industrial, or vacant properties and Village alleyways will be removed to the target excavation depth, as shown on the drawings. If the target excavation depth is the same as the maximum sample depth, X-ray fluorescence (XRF) screening will be performed at the base of the excavation. Pending the results of the XRF screening, additional excavation will be performed up to a maximum depth of 30 inches. If concentrations exceeding the cleanup levels remain at 30 inches depth, a demarcation barrier will be placed at the base of the excavation before backfilling and restoration.
- The excavated material will be transported to the FA and either placed directly in the constructed consolidation area or staged at the FA for future placement within the consolidation area. The consolidation area will eventually be capped with a cover system consisting of a 24-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. If the excavated material is not placed in the consolidation area by the completion of the surrounding properties RA, or if work stops for an extended period (as determined by the owner's representative), the excavated soil staging pile will be vegetated for stabilization until remediation of the FA occurs.

Residential cleanup levels for arsenic, cadmium, lead, and zinc were developed assuming unrestricted future use. Cleanup levels developed during the RI/FS (ENTACT 2008, ENTACT 2009a, ENTACT 2009b) were evaluated, and the lower of the calculated noncancer preliminary cleanup goal (PCG) and the calculated cancer PCG for each of the three target risk levels (10^{-4} , 10^{-5} and 10^{-6}) was selected as summarized in the ROD (EPA 2012).

An exception was made for arsenic, where the noncancer PCG of 32 milligrams per kilogram (mg/kg) was selected, which is based on a hazard index of 1. The selected PCG is lower than the cancer PCG based on the 10^{-4} target cancer risk level (35 mg/kg). The cancer PCGs based on 10^{-5} (3.5 mg/kg) and 10^{-6} (0.35 mg/kg) were lower than Illinois background (13 mg/kg), and EPA does not generally require

cleanup below background levels. Table 1-1 shows the final cleanup levels for residential and nonresidential properties

Table 1-1. Final Cleanup Levels

Old American Zinc Superfund Site Surrounding Properties

| Contaminant of Concern | Residential (mg/kg) | Non-Residential (mg/kg) |
|-------------------------------|----------------------------|--------------------------------|
| Arsenic | 32 | 239 |
| Cadmium | 37 | 809 |
| Lead | 400 | 826 |
| Zinc | 6,400 | 306,600 |

The overall quality control (QC) objective is to implement the final design and provide documentation that supports achieving the testing, submittal, inspection, and the systems' performance requirements, in such a manner that all work performed adheres to the following objectives:

- Complies with federal, state, and local regulations
- Protects human health and the environment
- Provides the client with a usable product intended to meet the project objectives (described above)
- Is cost-effective

1.4 Scope of Work

Roles during the RA will be defined as follows:

- Owner: EPA, Region 5.
- Engineer: CH2M.
- Property Owner: Property owner of individual property within the surrounding properties area.
- Tenant: Person(s) residing at the property, if different from Property Owner.
- Owner's Representative: construction management firm, or United States Army Corps of Engineers, which the owner has contracted to complete the RA.
- RA Contractor (contractor): Responsible for completing work described in the contract documents, and management of all subcontractors.
- Subcontractor: A subcontractor retained by the contractor.

This CQAP describes the construction process, as well as the quality management process activities that will be implemented at the site during the construction activities. When this document references the owner's representative, it should be construed to mean the owner's representative and its contractors as their respective trade may apply to the subject being discussed. The following are major components of the construction activities:

- Mobilization
 - Mobilizing equipment, personnel, site trailers, and sanitary facilities.
 - Installing erosion controls and best management practices.
 - Clearing and grubbing of vegetation and implementation of erosion control measures in the disturbed areas on the FA, as required.
 - Setting up a site trailer and utility connections for the contractor and any subcontractors. These activities will be coordinated with the FA contractor and may be used by both contractors.

- Constructing temporary roads, stockpile, and laydown areas at the FA. Construction of these components will be coordinated with the FA contractor to ensure they are not placed within an area the FA contractor will be working.
- Establishing traffic controls and routes.
- Conducting photographic documentation of preconstruction conditions of the site.
- Notifying the appropriate regulatory agencies.
- Site Preparation
 - Performing preconstruction property visits (initial preconstruction meeting and second preconstruction meeting) with property owners.
 - Performing utility locates using the one-call utility location system (JULIE) for each property. A third-party utility-locating service may be used for some properties if deemed necessary by the owner's representative.
 - Conducting preconstruction surveys, if determined necessary by the owner's representative.
 - Clearing, grubbing, tree, shrub, and fence removal at properties, where necessary.
- Excavation, Transportation, and Disposal
 - Excavating soil to the excavation depths indicated on the property drawings or up to a maximum depth of 30 inches below ground surface (bgs), as determined by XRF screening.
 - Performing XRF screening in landscaped areas and at the bottom of excavations performed to maximum sample depth, as indicated on the Drawings. XRF screening levels will be determined by the owner.
 - Conducting post-excavation surveys, if determined necessary by the owner's representative.
 - Performing personnel and perimeter air monitoring.
 - Managing water that accumulates in excavations.
 - Transporting excavated soil to the FA for direct placement into the consolidation area or for stockpiling at the soil staging pile, as directed by the owner's representative.
- Management of soil staging pile at the FA
 - If, at the completion of the RA, the excavated soil has not all been placed into the consolidation area, the excavated soil stockpile will be seeded, followed by a 6-week maintenance period, or longer, as directed by the owner's representative.
- Backfilling and compaction
 - Placing demarcation fabric for excavations where XRF screening indicates chemical of concern (COC) concentrations above screening levels at 30 inches bgs. Screening levels will be determined by the owner.
 - Backfilling properties with general backfill and topsoil.
 - Backfilling the alleyways with general backfill and gravel.
 - Backfilling gardens and landscape areas with select topsoil.
 - Conducting compaction testing.
 - Performing a post-backfilling survey, if determined necessary by the owner's representative.

- Restoration
 - Concrete and asphalt repair
 - Erosion repairs
 - Street cleaning
 - Restoring disturbed areas on the FA.
- Landscaping and maintenance
 - Tree, shrub, and perennial replacement
 - Seeding
 - Wood mulch and rock mulch replacement
 - 6-week maintenance period for each property, or longer, as determined necessary by the owner's representative
- Post-construction property review
- Demobilization
 - Removal of all field equipment, temporary facilities, and other miscellaneous items upon completion of fieldwork and punch list items
 - Final acceptance

1.5 Critical Success Factors

The following are the critical success factors for the project:

- Implement site improvements that effectively and efficiently meet project objectives and integrate safety, environmental compliance, and cost sensitivity into the design and construction.
- Implement the unanticipated discovery plan when cultural materials are observed. Contact state historic preservation office if human remains are encountered.
- Complete all work safely, on time, under budget, and in compliance with the specified scope.
- Identify and document value-added opportunities.
- Identify and document health, safety, quality, and environment lessons learned.
- Communicate effectively among owner's representative's project team members and the owner.
- Follow the procedures set forth in this CQAP to ensure work is delivered with zero quality incidents.

Organization and Responsibilities

Responsibilities and authority are described in the following subsections.

2.1 Responsibilities

2.1.1 EPA—Superfund (Owner)

EPA is responsible for the overall execution of the project. EPA will retain independent design, QA, and construction organizations to accomplish the work, and will have the authority to hire and fire these organizations. EPA has the authority to accept or reject QA plans, reports, and recommendations of EPA's representative, and the materials and workmanship of contractors. Sheila Desai is the EPA work assignment manager (WAM) for the RA.

2.1.2 Owner's Representative

The owner's representative will manage the tasks required to complete the RA work assignment and to oversee the activities of the contractors assisting with those tasks. The engineer will assist with RA tasks, as directed by the owner, to support RA activities. Table 2-1 outlines the assumed owner representative's construction team organizational structure for construction activities. However, the owner representative's actual organizational structure may differ, and will be determined once selected by the owner.

Table 2-1. Remedial Action Project Personnel
Old American Zinc Superfund Site Surrounding Properties

| Job Title | Roles and Responsibilities |
|-----------------|---|
| Site Manager | <ul style="list-style-type: none"> Ensures project direction and goals align with the site wide strategy. Directs contact with the owner and external stakeholders. Serves as the main interface between the project team and the owner. Represents the project team at meetings. Reviews deliverables prior to client submittal. |
| Project Manager | <ul style="list-style-type: none"> Meets overall project objectives and goals. Acquires and applies technical and corporate resources to meet budget and schedule constraints. Effectively charts the construction team. Serves as primary point of contact to the site manager. Responsible for the oversight and management of construction activities. Performs RA submittal reviews. Oversees the preparation of the deliverables. Reviews the work performed on each task against project goals and objectives for quality, responsiveness, and timeliness. Has overall responsibility for project controls. Identifies and realizes remediation value-added opportunities. Conducts weekly progress meetings and weekly quantity verification meetings, and prepares and distributes meeting notes discussing progress problem areas, and status of long-lead items. |

Table 2-1. Remedial Action Project Personnel

Old American Zinc Superfund Site Surrounding Properties

| Job Title | Roles and Responsibilities |
|---------------------------------------|---|
| Assistant Project Manager | <ul style="list-style-type: none"> Assists project manager (PM) in meeting overall project objectives and goals. Acquires and applies technical and corporate resources to meet budget and schedule constraints. Primary point of contact to the PM. Assists PM with the oversight and management of construction activities. Oversees the preparation of the deliverables. Performs RA submittal reviews. Reviews noncompliance notices submitted by the field quality manager and determines an appropriate action. Identifies and realizes remediation value-added opportunities. |
| Construction Quality Manager | <ul style="list-style-type: none"> Performs inspections and surveillance of project activities as necessary to ensure the quality of service, product, and workmanship meet the requirements of the project. Ensures quality planning elements are implemented as required in this CQAP. Ensures daily reports meet project requirements and correctly implement the document control/management process. Completes daily QA/QC verification forms. Ensures all delivered materials are inspected. Verifies corrective actions are taken when deemed appropriate. Participates in quality audit. Ensures required field forms and logs are completed. Advises the PM of site conditions or construction conditions that may affect the accomplishment or quality of work. Reviews results of contractor submitted quality control tests for compliance with contract requirements. Conducts air monitoring in accordance with the health and safety plan (HASP) and air monitoring plan. |
| Program Quality Assurance Manager | <ul style="list-style-type: none"> Ensures implementation of the EPA quality program. Performs or delegates construction audits and inspections. Participates in Operational Readiness Review meeting. Performs RA submittal reviews. Participates in quality audit. |
| Responsible Health and Safety Manager | <ul style="list-style-type: none"> Responsible for overall health and safety needs, including audits, clearing staff to work, and developing safety plans. Reviews pre-qualifications for contractors. Performs RA submittal reviews. Reviews/approves contractor activity hazard analyses (AHA) and site-specific health and safety plans prior to beginning fieldwork. Ensures the HASP is followed by all site employees. |
| Contract Manager | <ul style="list-style-type: none"> Ensures project complies with internal business group contracting policies. Negotiates contracts and issues purchase orders to contractors. Provides guidance to contractor change orders. Closes contracts at the end of the project. |
| Environmental Manager | <ul style="list-style-type: none"> Ensures compliance with state and federal permitting requirements. Performs RA submittal reviews. |
| Waste Management Specialist | <ul style="list-style-type: none"> Ensures waste management complies with local, state, and federal laws. Ensures compliance with state and federal permitting requirements. |

Table 2-1. Remedial Action Project Personnel*Old American Zinc Superfund Site Surrounding Properties*

| Job Title | Roles and Responsibilities |
|--|---|
| Secretary of the Interior Qualified Archaeologist | <ul style="list-style-type: none"> • Monitors for presence of previously undiscovered cultural resources. • Maps all exposed features. • Contacts state historic preservation office and coroner if human remains are encountered. • Implements the unanticipated discovery plan. |
| Construction Manager | <ul style="list-style-type: none"> • Manages all construction activities in the field. • Anticipates, understands, and implements proactive management solutions as construction work packages are assembled, procured, and awarded. • Describes, quantifies, documents, and communicates change management items. • Allocates construction resources. • Reviews and manages construction scope, schedule, and budget. • Updates the project schedule for all construction tasks and identifies potential scheduling conflicts or schedule creep. • Reviews contractor's technical and cost proposals related to construction submittals. • Interprets the technical content of drawings with respect to deviations or requests for clarification. • Reviews contract modifications and forward modifications to the PM for approval. • Performs inspection and surveillance of field activities as necessary to ensure the quality of service, product, and workmanship meets project objectives, describes, quantifies, documents, and communicates potential change management items as soon as they are anticipated as potential issues. • Notifies the PM if a project cannot be completed regarding quality, schedule, or cost. • Coordinates project activities to achieve conformance with construction specifications. • Submits nonconformance reports and other QA documents to the project QC manager. • Documents the resolution of inadequacies noted in nonconformance reports. • Establishes location, time, and sampling criteria for verification testing to be performed by field staff. • Reviews results of contractor-submitted QC tests for compliance with contract requirements. • Advises the PM/construction of conditions that may affect satisfactory completion and quality of the work. • Confirms that QA and support personnel are adequately trained. • Performs inspection and surveillance of field activities, as necessary to ensure that the quality of service, product, and workmanship meet project requirements. • Reviews contractor's monthly payment requests and forwards the requests to the PM for approval. • Provides the PM with a detailed weekly construction status report, containing photographs and weekly logs. |
| Site Safety Coordinator | <ul style="list-style-type: none"> • Supervises the direct and daily activities of the field team to coordinate with the daily activities of the contractor. • Reviews daily inspection reports for completeness. • Tracks all onsite project personnel hours. • Collaborates with the health and safety manager (HSM) to maintain the HASP. • Provides project-specific information to the HSM needed to determine personal protective equipment selection. • Ensures owner's representative's staff are chartered on the HASP and other required health, environment, and safety documents. • Ensures contractors have submitted required AHAs to the HSM for review and have received acceptance for AHAs prior to mobilization. |

Table 2-1. Remedial Action Project Personnel
Old American Zinc Superfund Site Surrounding Properties

| Job Title | Roles and Responsibilities |
|------------------|--|
| | <ul style="list-style-type: none"> Establishes site control and appropriate decontamination processes for personnel and equipment. Ensures safety supplies and equipment required by the HASP are onsite, calibrated as appropriate, and in good working condition before initiating work in the field. Ensures all feasible controls and safe work practices are considered before returning personal protective equipment. Ensures good housekeeping at field locations. Completes all forms necessary and specified in the HASP and ensures documents are submitted for review prior to being filed in the project binder. Conducts air monitoring, enforces HASP action levels, maintains calibration records, and records air monitoring results. Verifies proper utility clearances prior to breaking ground. Acts as the project's emergency response coordinator and performs pre-emergency planning tasks as outlined in the HASP before starting field activities. Notifies PM and HSM of all near-misses, injuries, and incidents immediately. Completes an Incident Report Form within 24 hours of an incident. Provides additional or updated information to the HSM after submitting the initial incident report. Collaborates on incident investigations. Verifies project files include safety-related training and medical monitoring records, and site-specific safety procedures prior to beginning any contractor's field operations. Performs oversight and/or assessments of the contractor health and safety practices in accordance with the HASP. Implements any noise conservation program requirements and hearing protection requirements. Prepares and conducts site orientation sessions for field personnel. Collects contractor timesheets and quantity verification sheets during daily safety briefings and updates tracking tools. |
| Document Manager | <ul style="list-style-type: none"> Implements the document control processes. Implements the document management processes. Archives documents and records. |
| Engineer (CH2M) | <ul style="list-style-type: none"> Meets overall project objectives and goals. Provides guidance during construction, as directed by the owner. Manages design efforts. Provides design guidance during construction, as directed by the owner. Performs technical submittal reviews, as directed by the owner. |

Multiple field technical staff will be employed during the execution of this project because of the planned operation schedule, which will generally be limited to 7:00 a.m. to 6:00 p.m. Monday through Friday, for an estimated 7-month construction period. Fewer field staff may be employed during the final 6-week maintenance period.

2.1.3 Contractors

The contractors are responsible to perform work in accordance with the design plans and specifications, meeting the acceptance requirements detailed in the design. It is assumed that construction components (including, but not limited to, earthwork, transportation, staging excavated soil at the FA (if necessary), surveying, landscaping, watering properties, and seeding and watering the excavated soil staging pile at the FA (if needed) will be performed under a single contract (hereafter referred to as contractor). An analytical laboratory services contract will be required for QC samples for borrow sources and liquid waste characterization. Although the primary contractor may choose to subcontract

portions of the project, in this document “contractor” will refer to the primary contractor. The contractor will work under the oversight of the Construction Manager (CM). The contractor will be responsible for construction QC requirements, as appropriate.

The contractors are responsible for certifying that the products supplied conform to the plans and specifications. The individual contractors are collectively referred to as contractors within this CQAP.

2.1.4 Vendors, Independent Test Companies, and Subcontractors

Vendors, independent test companies, and subcontractors are agents of the respective contractor by way of subcontracts, sub-subcontracts, or similar arrangements. As such, they are responsible, through the contractor, for maintaining QC procedures in accordance with their contractual arrangements and the contractor’s QC plans. The agents should also provide the contractor with QC data and reports necessary for the agent’s submittals to the PM. The following subcontractors may be used for this project:

- Borrow source provider of topsoil, general backfill, gravel, and other borrow materials as necessary
- Utility-locating service(s)
- Surveying services
- Transportation and disposal services
- Landscaping/site restoration

Quality Control Processes

Section 3 defines the reporting and documentation requirements that will be implemented during construction activities to ensure QC of the work.

3.1 Construction Quality Management

An inspection system referred to as the Three Phases of Control (3POC) will be implemented as a contractor construction quality management process. The 3POC is a three-step inspection process that includes the Preparatory Phase, Initial Phase, and Follow-up Phase inspections. The process is designed to discuss the project requirements prior to initiating any construction work activities, assess the quality of work early in the execution of work, and monitor the work throughout the delivery until completion. The 3POC process is intended to enhance management of construction quality and formalize documentation of the quality administrators for each definable feature of work (DFOW) for the project. A DFOW is a task that is separate and distinct from other tasks and has separate control requirements. The 3POC process will be implemented for each of the following RA DFOWs:

- Utility Locating (DFOW 1)
- Mobilization and Site Preparation (DFOW 2)
 - Equipment delivery and facilities construction
 - Preconstruction property visit
 - Excavation limits
 - Preconstruction surveys, if deemed necessary by owner's representative
 - Protection of property
 - Utility locating
 - Stormwater pollution prevention plan implementation
 - Clearing, grubbing and tree, shrub, and fence removal
- Property Remediation (DFOW 3)
 - Soil excavation
 - Fugitive dust and noise restrictions
 - Backfilling
- Surveying (DFOW 4)
 - Post-excavation, if deemed necessary by owner's representative
 - Post-backfill, if deemed necessary by owner's representative
- Sampling/Testing (DFOW 5)
 - Air monitoring
 - Borrow source sampling and testing
 - Waste characterization (if needed)
 - Soil compaction testing
- Waste Management (DFOW 6)
 - Transportation
 - Staging pile at FA (if needed)
 - Disposal (if needed)
- Site Restoration (DFOW 7)
 - Landscaping (tree, shrub, perennial replacement at properties)
 - Seeding and watering at properties

- Fence replacement
- Soil cover, seeding, and watering staging pile at FA (if excavated material is not placed directly into the consolidation area)
- Watering
- Demobilization (DFOW 8)

The respective inspection phases are discussed in the following subsections.

3.1.1 Preparatory Phase

The preparatory phase is the step in delivering the project that essentially culminates the planning and design process leading up to actual fieldwork of a specific property or alleyway. It also serves to ensure that the project delivery, QC, and safety plans have been completed and are ready to be implemented. The following events take place during the preparatory phase for each DFOW established by the CM:

1. Confirm that the appropriate technical specifications are incorporated into the project work plans and construction drawings, and review specifications with the CM and other field team members.
2. Confirm that the appropriate contract drawings are incorporated into the project work plan, and review drawings with the CM and other field team members.
3. Verify with the construction quality manager (CQM) that all shop drawings and preconstruction submittals (materials, health and safety, project plans) have been approved by the proper approving authority (including factory test results, when required).
4. Confirm with the CM and CQM that the testing plan coincides with the project plans and that adequate testing is called for to assure quality delivery.
5. Confirm definition of preliminary work required at the work site, and examine the work area with the CM.
6. CM to confirm required preliminary work has been properly completed.
7. Confirm that waste profiles are properly completed, transporters are approved, and disposal facility acceptances and approvals are in place.
8. Confirm availability of required materials and equipment. Confirm with CQM and CM that materials and equipment inspected and CQM to confirm compliance with approved submittals.
9. Confirm with the HSM that the site HASP and AHAs have been reviewed and approved to verify that safety concerns are adequately addressed, and applicable safety requirements have been incorporated into the plan. Confirm that the appropriate safety data sheets have been identified and properly submitted.

Discuss with the CM the construction methods to be employed during the RA. Confirm that all field team members are aware of the identified checkpoints and areas of evaluation that will allow determination that the appropriate quality of construction is being achieved. All observations will be recorded in the Preparatory Phase Report (Attachment A, Form A.1).

3.1.2 Initial Phase

The initial phase occurs at the startup of remedial activities, or construction, associated with a specific DFOW. Essentially, the initial phase confirms that the CQAP is being effectively implemented and the desired results are being achieved. With the initial phase, it is required to notify the CQM that the crews are ready to start a particular DFOW prior to their actual start.

Specific details associated with the initial phase are as follows:

1. Establish the quality of workmanship required to properly deliver the DFOW in accordance with project requirements. The CQM assures that the CM has made the contractor aware of expectations associated with the construction methods established under the preparatory phase. This assurance is to be achieved through observation of the initial work activities, as well as through interaction with the CM.
2. Resolve conflicts. The CQM will provide support to the CM in resolving conflicts involving quality issues. Should conflicts arise in establishing the baseline quality for the DFOW, the responsibility to resolve the conflict falls to the CQM. Should the conflict not be resolved in a manner that satisfies the contract requirements, the CQM will elevate the conflict to the PM. Should the issue jeopardize the results of the DFOW, or put the project at risk of noncompliant performance, the PM or CQM may direct a cessation of work activity.
3. Evaluate the site HASP and AHAs against actual work conditions with the CM to assure that the hazard analysis conducted to prepare the safety plan adequately addressed field conditions. Confirm applicable safety requirements are being implemented during construction activities.
4. Observe and evaluate the performance of testing technicians. Confirm with the CQM that testing is being performed in accordance with the testing plan and that required protocols are being observed. Review reports and documentation associated with extraction, packaging, transporting, and testing of samples. Note discrepancies and direct correction accordingly.

Upon completion of the initial phase activities, results are to be documented in the initial phase checklist (Attachment A, Form A.2).

3.1.3 Follow-up Phase

Completion of the initial phase of QC activity leads directly into the follow-up phase, which addresses the routine day-to-day activities on the project site. Inspection activities associated with each DFOW are to be addressed within the daily report. Specific concerns associated with the follow-up phase include the following:

1. Inspection of the work activity to assure work complies with the contracted project tasks.
2. Evaluation and confirmation that the quality of workmanship is being maintained at a level no less than that established during the initial phase.
3. Evaluation and confirmation that required testing and surveying are being performed in accordance with procedures established during the preparatory phase and confirmed during the initial phase.

Confirmation that nonconforming work is being corrected promptly (within 24 hours) and in accordance with the direction provided by the CM.

Project Communications and Meetings

Section 4 discusses project communications and meetings.

4.1 Lines of Communication

Accurate and timely communication is required to avoid construction-related conflicts and potential errors and omissions.

4.1.1 External Communications

The owner, the engineer, the owner's representative, contractors, and their respective employees and staff will have an established communication network. Establishing open lines of communication is essential for maintaining strong working relationships and producing quality work. The following communication guidelines should be adhered to throughout the project:

- The site manager (SM) should be the primary contact with the EPA's WAM.
- In-person questions (if they occur) from the EPA WAM should be answered honestly and directly, but without speculation. If the answer is not known, tell the EPA WAM that you do not know, that you will find the answer, and that someone will quickly respond. Contact the SM and PM immediately to update them on the conversation and unanswered questions.
- All stakeholder phone conversations must be documented. A copy of the phone call record should be routed to the PM, CM, and any other project team members who could be affected.
- The SM or PM will coordinate all formal client meetings. The owner's representative will prepare and distribute minutes of all meetings within 5 days.

The SM and PM must review all EPA correspondence before it is sent. Table 4-1 lists the key elements of the communication plan for construction.

Table 4-1. Summary of Communications and Meetings

Old American Zinc Superfund Site Surrounding Properties

| Type of Communication | Channel of Communication | Schedule |
|---|--|------------------------|
| Communication with external stakeholders | Routine and as-needed call by SM and PM with the owner. | To be determined (TBD) |
| Prebid Meeting | The owner, SM, PM, engineer (if directed by the owner), CM, contractors, and any subcontractors should be present. | TBD |
| Construction Charters | Charter construction team | TBD |
| Preconstruction meeting | PM, CM, SM, contractors, and any subcontractors should be present. | TBD |
| Coordination Meeting/Preconstruction Client Meeting | Meeting to discuss construction activities. The owner, stakeholders, PM, CM/site safety coordinator (SSC)/construction quality manager (CQM), contractors, and any subcontractors should be present. | TBD |
| Operational Readiness Review (ORR) | Checklist to prepare for mobilization | TBD |

Table 4-1. Summary of Communications and Meetings

Old American Zinc Superfund Site Surrounding Properties

| Type of Communication | Channel of Communication | Schedule |
|-------------------------------------|--|----------|
| Project status meetings | Discuss construction activity progress and status. PM, CM/SSC/CQM, SM, and the contractors should be present. | TBD |
| Problem or work deficiency meetings | A special meeting may be held if a problem or deficiency is present or likely to occur. PM, CM, SM, QC Manager, CQM, and HSM, the affected contractor, and subcontractor(s) involved in the problem or deficiency. | TBD |
| Field-level communication channel | Contractor to CM. CM to PM/SM. PM/SM will continue the communication chain as needed. | TBD |

Project-specific personnel and lines of communication will be discussed and established by all parties at the preconstruction meeting. The discussion will include the following topics:

- Communication procedures between supervisory and field staff.
- Direct communication procedures between key parties for specific issues and situations.
- Procedures and restrictions for secondary lines of communication within the project organization.
- Procedures for information transfer and confirmation between the various parties.
- Procedures for documentation of all communications.
- Format for meetings, reports, submittals, etc.

Communication will be documented with each party receiving a copy of such documentation (for example, telephone memorandums, meeting notes). Copies will be routed to other parties that should be informed of the situation (for example, problem, change, or agreement).

Document control procedures will be established for items such as contractor submittals, test results, and plan or specification revisions. The controls will include distribution and confirmation procedures to verify that documents are appropriately dispatched and incorporated into the project. Whenever possible, documents indicating revisions in plans, specifications, or procedures will be distributed immediately and explained to all parties at routine or special project meetings.

4.1.2 Internal Communications

The CM will communicate daily with the PM, and the PM will communicate with the SM. The SM will communicate with extended team members. All construction issues will be communicated through the CM and PM. The parties will discuss and establish the project-specific personnel and lines of communication at the kickoff meeting. The discussion will include the following:

- Communication procedures between the CM and other field staff
- Direct communication procedures between key parties for specific issues and situations
- Procedures and restrictions for secondary lines of communication within the project organization
- Procedures for information transfer and confirmation between the various parties
- Procedures for documentation of communications
- Format for meetings, reports, submittals, etc.
- Format for potential change(s) that may require quantification and management

Formal communication, including, but not limited to, weekly progress meetings, discussions with stakeholders, and discussion with contractors that affect scope, schedule, or budget will be documented, and each party will receive a copy of such documentation (e.g., telephone memorandums,

meeting notes). Copies will be routed to other parties if they should be aware of the situation (e.g., problem, change, or agreement).

Document control procedures will be established for items such as contractor submittals, test results, and plan or specification revisions. All contractor submittals will be entered into the submittal register by the CQM upon receipt of the deliverable. At the time of entry, the CQM will document who needs to perform a detailed review of the document and notify the appropriate team members. Team members will document the completion of their reviews by indicating the approval status (e.g., approved or rejected) in the log with the date the review was completed. These controls will include distribution and confirmation procedures to verify documents are appropriately dispatched and incorporated into the project. Whenever possible, documents indicating revisions in plans, specifications, or procedures will be distributed immediately and explained at routine or special project meetings.

4.2 Project Meetings

Project meetings will be scheduled to promote communication between various personnel responsible for designing, constructing, managing, and observing the construction. The purpose of the routine project meetings is to keep all project staff members informed and to provide a forum for solving design, construction, and QA issues.

4.2.1 Prebid Meeting

A pre-bid meeting will be held to provide a forum for prequalified bidders to discuss the contract documents. At a minimum, the owner's representative's PM, CM, and the owner should be present to meet with interested bidders. Any specific questions that are brought up will be answered in the form of an addendum to the contract documents.

4.2.2 Contractor Health, Safety, Security, and Environment Chartering Meeting

Prior to mobilization, all contractors and subcontractors who will be physically mobilizing to the site are required to attend a health, safety, security, and environment (HSSE) chartering meeting with key owner's representative's personnel (PM, HSM, CQM, and CM). The purpose of the meeting is to discuss and agree on key HSSE requirements on the project and to emphasize and reinforce the owner's representative's expectations for HSSE performance. The meeting may be held over the phone or in person, depending on project needs.

4.2.3 Preconstruction Meeting

A preconstruction meeting will be held to identify project personnel, review the project, and schedule, clarify, or resolve outstanding issues before construction startup. At a minimum, the owner, the owner's representative's PM, CQM, and CM, the contractors, and selected subcontractors should be present. The PM, CQM, and CM will be prepared to discuss the following subjects, at a minimum:

- Required schedules
- Status of bonds and insurance
- Sequencing of critical path work items
- Progress payment procedures
- Project changes and clarification procedures
- Use of site, access, office and storage areas, security, and temporary facilities
- Contractor's HASP and representative
- Status of permits, license, or required approvals
- Status of submittals
- Maintenance of required records

- Activity hazard analysis
- Contractor's key personnel information and points of contact
- Contractor's QA/QC plan

The following will be performed by the CM and CQM during the preconstruction meeting:

- Provide each party with relevant construction and QA documents and supporting information. Supporting information may include construction drawings, specifications, and other applicable documents. The information transfer is not limited to documents distributed by the CM and CQM. All parties should use the opportunity to distribute relevant documents.
- Familiarize each party with his or her specific responsibilities relative to the design criteria, construction drawings, schedules, and specifications.
- Discuss the purpose of the CQAP and the documentation structure provided by the CQAP to verify that the project will be executed efficiently and in compliance with the specified design criteria and schedule.
- Review the responsibilities of each party.
- Review lines of authority and communication for each party.
- Discuss the established procedures and protocol for observations and tests, including sampling strategies.
- Discuss the established procedures and protocol for handling construction deficiencies, repairs, and retesting.
- Discuss the established procedures and protocol for handling contract modifications such as change orders and field orders.
- Review methods for documenting and reporting inspections and test data.
- Review work area security and safety protocols.
- Discuss procedures for locating and protecting construction materials and preventing damage to the materials from inclement weather or other events.
- Conduct a site walk to review construction material and equipment storage locations.
- Discuss payment for work in-place, including method of payment and unit cost work.

The preconstruction meeting will be documented by the CQM, and minutes will be provided to all parties.

4.2.4 Coordination Meeting/Preconstruction Client Meeting

Prior to the start of site work, the project team will meet with the owner and officials from Madison County, St. Clair County, Canteen Township, Village of Fairmont City, Village of Washington Park, and the City of East St. Louis, as appropriate to coordinate and develop a mutual understanding of the project details. Details will include, but are not limited to, a discussion of transportation routes; excavation near county-, township-, and village-owned utilities; live-loading plans; CERCLA-exempt permit substantive requirements; required licenses; allowable work hours; use of county, township, and/or village water; street closings; county, township, and/or village debris pickup; soil erosion control; tree removal; emergency response; and other special requirements and considerations. Minutes of the meeting will be prepared by the PM and signed by the owner's representative's personnel, the owner's designated delegate(s), and county and municipal stakeholders (fire marshal, representatives of local police, utilities, and health services, etc.). Meeting minutes will be distributed to the parties involved in the meeting and

placed in the project files. The meeting may be held in conjunction with other meetings (for example, the preconstruction meeting).

4.2.5 Operational Readiness Review Meeting

Prior to the start of site work, the owner's representative's PM will complete an operational readiness review (ORR) meeting. The ORR meeting will cover the owner representative's general requirements prior to the start of work, equipment and supplies necessary to complete the work, contractor requirements, sampling requirements, construction procedures, waste management procedures and requirements, and environmental permits. Any noted deficiencies during the meeting will be addressed prior to the start of work. Documentation of the ORR meeting will be saved in the project folder.

4.2.6 Project Status Meetings

After the start of site work and throughout project execution, the project team will conduct project status meetings (sometimes referred to as quality meetings) at least weekly. owner's representative(s) and stakeholders may attend any of the meetings. At a minimum, the following will be accomplished at each meeting:

1. Review the minutes of the previous meeting.
2. Review the schedule:
 - a. Work or testing accomplished since last meeting
 - b. Rework items identified since last meeting
 - c. Rework items completed since last meeting
 - d. Schedule delays and long lead time items
 - e. Critical milestones
 - f. Updated schedule of values
3. Review the status of submittals
 - a. Submittals reviewed and approved since last meeting
 - b. Request for information resolutions
 - c. Submittals required in the near future
4. Review the work to be accomplished in the next 2 weeks and documentation required:
 - a. Completion dates for rework items
 - b. Inspections required
 - c. Testing required
 - d. Status of offsite work or testing
 - e. Documentation required
5. Discuss health and safety issues, such as near misses and incidents.
6. Resolve quality issues such as nonconformance, rework, or corrective actions.
7. Resolve production problems.
8. Address items that may require revising the CQAP or other project plans:
 - a. Changes in procedures
 - b. Changes in design/engineering drawings and/or specifications
 - c. Changes or claims for additional compensation or time

Meetings will be recorded in project status meeting minutes, prepared by the CQM. The meetings may be held in conjunction with other meetings (such as tailgate safety meetings, progress meetings, planning meetings, etc.). Meeting minutes will be sent to all personnel attending the meeting.

4.2.7 Problem or Work Deficiency Meetings

A special meeting may be held if a problem or deficiency is present or likely to occur. The meeting should at least be attended by the owner's representative's CM and/or CQM, the contractor, and subcontractors involved in the problem or deficiency. The purpose of the meeting is to define and resolve a problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency.
- Review alternative solutions.
- Implement a plan to resolve the problem or deficiency.

The meetings will be documented by the CM, CQM, or a designated representative. Copies of the meeting minutes will be sent to all personnel attending the meeting, the PM, SM, and the owner, if not present.

4.3 Public Relations Plan

The CM may be approached by the public during construction activities because of the proximity of the work zone to a public road. If contact occurs, the CM/SSC should direct the individual(s) to contact the EPA primary public affairs contact for the site. The CM/SSC may tell the individual(s) that EPA- and Illinois EPA-approved corrective measures construction activities are being conducted; however, no additional project information may be shared. Once the individual(s) has left the work zone, the CM/SSC shall contact the SM/PM and document the exchange in the field notes and daily report.

Primary Contact: Sheila Desai/EPA – Project Manager, 312-353-4150, desai.sheila@epa.gov

4.4 Regulatory Inspections

If a local, state, or federal regulatory inspector makes an unannounced visit to the project site, the CM shall be familiar with and follow the owner's representative's protocol for agency inspections.

Document Control and Management

Section 5 discusses document control and management.

5.1 General

The document manager for the project is responsible for implementing the procedures described in this section. A document control and management process will be implemented so that current and correct documents are available where the work is performed and that project records are archived after the work has been completed. Obsolete copies will be appropriately marked and/or removed from the work site and destroyed. The document manager is also responsible for providing backup of field files to the central project files as required by these procedures. Hard copies of the specifications, property drawings, HASP, and signed AHAs will be kept on file at the owner's representative's trailer. Hard copies will include change order or request for information (RFI) resolution attachments.

The document manager will be responsible to check that project personnel, contractors, subcontractors, and customers use the correct version of project documents. In general, the document manager must receive all documents transmitted, either directly or copied in communications from other project team members.

5.2 Document Transmittals

Document transmittals between the project parties provide a record of communications that is necessary to keep appropriate construction and QA personnel informed of project requirements, progress, changes, and quality of the work. Transmittals should be formally communicated with proper documentation and confirmation of submittal and receipt to prevent misunderstandings and omissions.

5.2.1 Contract Clarification/Interpretation Requests

Contract clarification/interpretation requests and requests for information (Attachment A, Form A.3) are submitted when an explanation of the intent of specific project requirements, as presented in the contract documents, is required, which are generally submitted by the contractor to the document manager; however, the CM can submit clarification/interpretation requests to the contractor and should include the document manager on communications.

Contract clarification/interpretation requests shall be managed by the document manager. Interpretations of design or specifications by the design team will be issued in writing. In special cases, the engineer may communicate a design interpretation or clarification verbally, followed by written confirmation. Responses to contract clarification/interpretation requests will be obtained in a timely manner to limit the impact on the project schedule. The PM is responsible for informing all parties of the design team's interpretations by distribution of documents to construction and QA personnel through the document manager, or by copying the document manager on communications, at a minimum.

5.2.2 Contract Modification Requests

A contract modification request is made if a change to the contract documents is deemed necessary for the following reasons:

- Changed site conditions
- Changed materials conditions
- Alternative design procedures proposed
- Alternative materials proposed

Contract modification requests (Attachment A, Form A.4 [273]) are generally prepared in response to a contract clarification/interpretation request submitted by the contractor or the document manager that affects the contract scope, schedule, or budget. Contract modification requests should be submitted to the document manager for coordination with the appropriate groups. The appropriate groups will review, negotiate, and finalize all contract modification requests and forward modifications to the PM for approval. The CM or CQM will prepare contract modifications (change orders) as necessary, including the document manager on communications for submittal to the contract administrator. Responses to contract modification requests will be obtained in a timely manner to limit the impact on the construction schedule. The CM is responsible for transmitting all contract modifications to the appropriate organizations before the change becomes part of the project record.

Likewise, the CM or CQM may issue a field order (Attachment A, Form A.5 [275]) for clarification and interpretation of drawings in cases where a contract modification is not suitable, including the document manager on communications. For example, a field order may be issued in response to a contractor-initiated contract clarification/interpretation request when the clarification does not affect the design intent, schedule, or cost of the work.

5.2.3 Contractor Submittals

Construction QC submittals are those submittals generated by the contractor during or immediately before construction to demonstrate compliance with the project plans. Submittal requirements for these projects are tabulated in the submittal register (Attachment B), in accordance with the requirements identified in the project plans.

The CQM, with support from the PM, will log and track all submittals on the submittal register. The following are specific responsibilities regarding submittals:

- Coordinating all submittal actions.
- Maintaining necessary submittal records in an organized manner.
- Maintaining and tracking submittals in the submittal register.
- Reviewing and certifying all submittals for compliance with the project plans, drawings, and specifications.
- Approving all submittals, except those designated to be approved by the design manager, owner, and/or stakeholders.
- Checking all material and equipment delivered to the project for compliance with the project plans, drawings, and specifications.

Certain designated technical or other submittals require approval by authorities other than the QC Manager, HSM, or PM. In such cases, the CQM will forward the submittal to the appropriate approver as specified in the Submittal Register.

The PM is responsible for coordinating the submittal transmittal and approval process and for ensuring that the process does not affect the project schedule.

5.2.3.1 Technical Submittals

The contract documents require that the contractor submit various technical submittals. The submittals are outlined by their respective phase of work and as presented in the Submittal Register (Attachment B). Documents shall be submitted with a transmittal log (Attachment A, Form A.6 [295]) to the document manager according to the frequency and number specified in the contract documents. Subcontractor and vendor submittals shall be made through the contractor.

As submittals are received, the CQM will document their receipt in the Submittal Register. The CQM will assign the submittal to appropriate project team members for detailed review using the project SharePoint site. Reviewers will check the submittal for general compliance with the contract documents and will note missing information or deviations in the submittal review form (Attachment A, Form A.7). The CM and/or PM will oversee the review process and help resolve questions regarding compliance with contract documents.

Review comments on submittals will clearly state information the reviewer considers to be lacking. Notes must be documented in the submittal quality review form (Attachment A, Form A.7) so that deficiencies can be clearly identified by the contractor. Notes will not be in the form of questions; they must state what has been omitted or what is unacceptable.

Following the detailed review, the PM will send a marked copy of the submittal and a submittal reply form to the contractor. The PM will indicate on the submittal reply form whether deviations from the contract documents were noted, and whether additional submittals or resubmittals by the contractor are required. Copies of the original submittal, review copies, and submittal register and reply forms will be kept in a project submittal file.

5.2.3.2 Field Testing, QC Submittals

Submittals are administrative and technical documents such as design drawings, shop drawings, work plans, permits, certifications, schedules, air monitoring data, reports, and other types of documents and any accompanying samples that are required for the work.

Construction QC submittals are those generated by the CM, CQM, or by the contractor prior to or during construction to demonstrate compliance with the project plans, specifications, and drawings. For materials and equipment procured directly by the owner's representative, the CM or CQM is responsible to check that the proper submittals are provided by the suppliers before accepting delivery. For materials and equipment supplied by the contractor, the CM or CQM is responsible to check that the proper submittals are provided and approved prior to delivery or installation.

The contract documents require that the contractor submit a QC plan, materials certifications, inspection and test data, etc., for review by the CM, CQM, and staff. Documents shall be submitted to the document manager, who will forward copies to the CM, CQM, and PM for conformance evaluation and incorporation into the records. Subcontractor vendor submittals will be made through the contractor. Test data and similar submittals will be submitted with a transmittal form (Attachment A, Form A.6 [295]) outlining the contents of the submittal and the date submitted.

5.2.4 Nonconformance Reports and Corrective Actions

The CQM or CM will notify the contractor of any detected noncompliance with the foregoing requirements. The contractor will take immediate corrective action after receipt of such notice. Such notice, when delivered to the contractor at the work site, will be deemed sufficient notification. If the contractor fails or refuses to comply promptly, the CQM or CM may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the daily report. Corrective actions will remain open, as noted in the daily reports until acceptable closure of the nonconformance. Verification of the corrective action and its results will be performed by the CM and documented in the daily report.

5.2.4.1 Initiation of Reports

When materials, methods, or work elements are not in accordance with contract documents and immediate resolution (within 24 hours) cannot be achieved, a nonconformance report (Attachment A, Form A.8 [442]) will be prepared. Nonconformance reports initiated by the CQM will be submitted to

the CM, who will issue the nonconformance report to the contractor, copying the document manager, and will check that the contractor develops a corrective action plan.

The written nonconformance report shall be issued as soon as possible after nonconformance is detected. Each nonconformance report will be assigned a unique file number and recorded on a nonconformance report log (Attachment A, Form A.9 [444]). The log will allow the status of the nonconformance to be easily tracked.

The sole exception to this policy will be verbal notices made by the CM or CQM to the contractor for procedures that can be, and are, corrected immediately upon notice. Verbal notices will be recorded in the daily reports with an explanation of corrective measures taken and the time required to bring the work into conformance.

5.2.5 Resolution of Nonconformance

No payment will be issued for nonconforming work until the associated nonconformance is resolved. Each nonconformance report will remain in effect until corrective actions have been taken that meet the intent of the contract documents and the satisfaction of onsite QA representatives. When corrective actions are acceptable, the CM or CQM will document the corrective actions taken and results of retests, and will complete the acceptance portion of the nonconformance report. Likewise, the CM or CQM will observe and document the corrective actions and acceptability of the results on field observation forms. Whenever possible, retests shall be performed by the same CM or CQM who initially detected the nonconformance.

Full documentation is required for resolution of each nonconformance report. When a nonconformance is resolved, the following documentation procedures (Attachment A, Form A.10 [443]) will be followed:

- A copy of the observer's explanation of corrective action and acceptance will be attached to the nonconformance report for review and filing.
- Daily reports, data summaries, etc., will be updated to reflect the resolved status of the original deficiency (for example, notes of corrective action in observation reports, resubmittals, and retest results). At a minimum, the nonconformance report file number, date, or test number that identifies the initial deficiency will be included.

The corrected nonconformance will be checked off the record book, initialed, and dated by the CM or CQM, or designated representative.

Change Management

It is critical to successfully anticipate and track change to keep on schedule and budget, or if the change will affect these things, to be fully aware of what the ramifications will be to both. Changes or clarifications may be needed during preparation of the deliverables and during field operations. All requests for change or clarification will be documented and resolved. Changes to design sketches, final project plans, field changes, and modifications to operating facilities are subject to design verification measures commensurate with those applied to the original documents (plans, design sketches, etc.).

The PM approves design or scope changes that do not affect project costs. The PM will communicate design or scope changes to the SM that will affect project costs and obtain client approval prior to proceeding. The owner may consult with the engineer, as needed. The RFIs will be used to communicate and document clarifications and modifications that will result in a cost or schedule change. Field orders will be used to document changes/field agreements that do not affect cost or schedule. RFIs and field orders can be requested by any member of the project team and will be tracked and logged by the CQM, PM, and contracts to ensure each RFI is fully addressed and that resolutions are documented.

All changes will be communicated to the PM as soon as the issue arises. The client should be notified of any changes to the proposed scope by the SM.

Complete documentation (Attachment C) will be maintained regarding who initiated the change, who approved the change and when, who implemented (completed) the change, and when was the change completed in the *Change Management Tracking Log* maintained in the project folder.

The following steps should be followed to manage change and potential change:

- As soon as a situation presents itself, either in the field or in the office that may affect schedule or budget, the CM needs to be notified immediately. The CM will notify the PM immediately.
- The PM and CM will determine the potential severity of the change and whether the potential change merits a budget and/or schedule estimate in order to discuss with the owner. If an estimate is required, the PM will work with project staff to compile an idea of the likely affect(s) on both schedule and budget.
- The PM and SM will discuss the potential change with all parties concerned, the construction contractor, and/or the EPA WAM.

The RFI process involves either the contractor, CQM, or CM identifying a situation in the field that requires change that will result in a change in cost or schedule. The RFI will contain the project number, an RFI identification number, and a title. This information is used for RFI tracking that will be entered by the CQM. The party identifying the change prepares the RFI and forwards it to the PM and CQM. If the RFI is nontechnical, the PM reviews and determines the cost implications and forwards the RFI to the SM as to discuss with the EPA WAM as required. If the RFI is of technical nature, the PM in collaboration with the CQM will forward the RFI to the appropriate project team members to address the information requested.

The response should include a narrative explanation of the resolution and attach any drawings or specifications required to complete the work. The response is returned to the PM and forwarded to the CM and contractor for field implementation. The RFIs are numbered sequentially for individual projects and filed electronically and at the job site.

6.1 Construction Changes

Changes to materials, supplies, work approaches, and corrective action area design during the construction effort will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

The RFI process involves either the contractor or the CM identifying the situation in the field that requires change. When the contractor identifies a change, the contractor reports the concern to the CM. The CM then prepares an internal memorandum (i.e., RFI) identifying the concern and forwards it to the PM. The PM reviews and forwards to the EPA WAM as needed. The RFI will contain the project number, an RFI identification number, and a title. This information is used for RFI tracking. The PM forwards the RFI to the appropriate personnel who then are responsible to identify the appropriate design representative to evaluate the concern and prepare the appropriate response. The response should include a narrative explanation of the resolution and attach any drawings or specifications required to complete the work. The response is returned to the PM and forwarded to the CM for field implementation. The RFIs are numbered sequentially for individual projects and filed at the job site with the CM.

Note that the RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the specifications of the project plans. The RFI is intended to obtain input and concurrence from the management personnel responsible for developing the project plans. If issues identified in the RFI may require a change to the project scope, schedule, or budget, this should be clearly conveyed in the RFI. In such instances, it is the responsibility of the PM/CM to work closely with the contract administrator to seek and obtain proper approval from the owner (in accordance with established contract procedures) before implementing the change recommended in the RFI.

Testing Requirements

The quality of materials and workmanship will be controlled by the contractor or supplier who furnishes the work or material involved; however, the contractor has the ultimate responsibility for QC of its subcontractors and vendors.

The CM and/or CQM will observe QC testing of the construction materials, workmanship, and the contractor's QC activities. Specific QA requirements for observation and verification testing are detailed in the attachments. Attachment A contains samples of forms that may be used or modified to document QA activities.

QC testing, sampling, and inspecting will be conducted by the contractor, the contractor's supplier, or contracted independent testing companies. The contractor will provide to the CM or CQM, in a timely fashion or as specified, copies of QC inspection and testing reports if specified in the contract. The reports will include documentation of failed tests and corrective actions taken.

7.1 Observation and Verification Testing

The CM, CQM, or other designated personnel will document observations in the daily report form (Attachment A, Form A.11) and will document verification tests in the appropriate testing and field forms. Documentation will be recorded in ink. To correct an error in a testing or field form, a single line will be drawn through the error with the correct information entered next to the error. All corrections will be initialed and dated.

The field personnel will obtain, review, and become familiar with the applicable procedures, codes, standards, specifications, drawings, observation, and verification testing requirements, and accept or reject criteria.

Daily observation records and verification testing forms will contain at least the following:

- Item, condition, or activity observed, or testing performed
- Location of observation or verification test
- Date of the observation or verification test
- CM's name and signature
- Type of observation or verification test
- Observation or verification test source criteria (for example, drawings and specifications)
- Results or acceptability
- Reference to corrective action taken in connection with nonconformance
- Relevant nonconformance report number

7.2 Quality Assurance Contracts

The QA contracts include contracts for independent laboratory testing. Items or services procured for QA purposes that may affect the measurement of the quality of the construction project will meet the requirements of the contract specifications and this CQAP, as applicable.

7.3 Testing

Sampling and testing will be performed to verify that control measures are adequate to provide a product that conforms to project plans, specifications, and drawings. The Sampling and Testing Log binder will include all testing and field forms to be used during construction to document the sampling

and testing conducted. Offsite testing will be performed by laboratories and testing companies with accreditation and certifications through industry-recognized organizations and standards. Onsite testing will be performed by individuals with documented training and experience to perform the testing as determined by their supervisor and accepted by the remedial program quality manager.

Testing services required for execution of the project will be contracted either directly by the owner's representative or by its contractor(s). The testing services will be procured according to a scope of work, which will be compliant with the project requirements and specifications. The scope of work will specify specific analytical and geotechnical testing methods (for example, ASTM International or similar standards), professional services, and other measurement protocols as specified in the project plans, designs, and specifications. The scope of work will also specify the nature of the report or deliverable required of the testing laboratory, including requirements for professional certification. Scheduling of site services will be the responsibility of the CM or CQM.

The following activities will be performed and documented during testing:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against traceable certified standards.
- Verify that recording forms and the test identification system, including all test documentation requirements, have been prepared.
- Record results of all tests, both passing and failing tests, on the appropriate field form. All tests will be compiled daily by the CQM and documented in the site-specific tracking log and daily report for the date taken.
- Give the section reference, location where tests were taken, and the sequential control number identifying the test. Actual test reports may be submitted later in accordance with project specifications with a reference to the test number and the date taken.

The test results must be signed by the testing laboratory's representative authorized to sign certified test results. The signed reports, certifications, and other documentation will be submitted to the owner as part of the construction completion reports.

7.3.1 Borrow Source Sampling

The contractor will identify suppliers of borrow materials as part of the preconstruction activities that are necessary for site improvements to roadways and installation of the new water line. Borrow sources may include general backfill (sand), gravel, and topsoil.

The contractor will collect samples of the borrow materials at the source and submit them to the owner's representative for laboratory analysis as outlined in the specifications. Analytical results will be tracked electronically by the CQM or designee throughout the site preparation RA. The results will be made available to the CM, PM, SM, and design team for review to ensure that materials comply with project specifications and meet criteria.

Additional borrow samples will be collected during construction activities to verify continued compliance with project specifications. Additionally, a sample will be retained by the owner's representative for visual comparison during construction activities to confirm consistency in the materials. If inconsistencies in the materials are observed, the owner's representative may collect additional samples to determine continued compliance or nonconformance with project requirements.

7.3.2 Dust Monitoring and Air Sampling

All air sampling will be conducted as outlined in the air monitoring plan (Attachment D). Real-time air monitoring for particulate matter will be conducted continuously at each property and at the FA near the borrow material staging pile and excavated soil staging pile (if present) while earthwork is being performed or when the staging pile is being constructed.

Personal air sampling pumps will be used in conjunction with dust-monitoring equipment and will have samples collected for laboratory analysis to determine potential exposure to arsenic, cadmium, lead, and zinc. These samples will be representative of the worst-case exposure that may occur to any potential receptors outside of the excavation area, such as residents or pedestrians, from a given excavation. Based on the results of the first week of personal air sampling, the sampling plan will be reviewed to evaluate the monitoring program for the remainder of the field event. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, and (4) level of work activity anticipated. Air monitoring is discussed in further detail in the air monitoring plan (Attachment D).

7.3.3 Waste Characterization Sampling

Waste characterization sampling is not anticipated during the RA. Soils and liquids will be managed as discussed in the following paragraphs.

Excavated soil will be placed directly into the consolidation area at the FA. If the excavated soil cannot be placed directly into the consolidation area due to construction sequencing, it will be staged at FA for future use in the FA remedy. The excavated soil staging pile will be sloped no greater than 4 to 1 at the FA. If the excavated soil staging pile is still present at the end of the RA, or if work stops for an extended period (as determined by the owner's representative), the stockpile will be covered with clean soil and seeded.

Aqueous waste will be contained and used at the FA for dust suppression in areas of the FA that have not been remediated.

If waste will be disposed offsite, the sampling frequency and analyses will be determined by the approval requirements of the selected disposal facility. Waste profiles will be reviewed by the owner's representative's environmental manager (EM) or waste coordinator prior to submittal to the owner for generator signature, which can then be forwarded to the landfill for final approval. Offsite disposal of soil waste will be coordinated and arranged upon receipt waste profile approval. The contractor will use the Waste Tracking Log (Attachment A, Form A.12) to manage waste.

7.3.4 Soil Compaction Testing

Soil compaction testing will be performed on borrow source materials placed during backfill. Compaction testing will be performed in accordance with Specification Section 31 23 23, Fill and Backfill. The contractor will perform in situ density testing using a nuclear density gauge or approved equivalent to demonstrate proper compaction.

If excavated soil is not placed directly into the consolidation area, the contractor will compact the material placed in the soil staging pile. The soil should be compacted using a bulldozer or owner's representative-approved equipment after each load is placed at the FA. At the completion of the RA, if the soil staging pile is present, it will then be covered with 4 inches of clean topsoil and lightly compacted to minimize settlement while still allowing infiltration of water and penetration of roots.

7.4 Sampling and Testing Log

As tests are performed, the CQM or approved supervising field staff, will record the following information on appropriate field forms, which will be available in the Sampling and Testing Log (Attachment A, Form A.13):

- Test reference
- Field personnel observing the test
- Date the test was conducted
- Time the test was conducted
- Date the test results were received
- Results of the tests
- Whether they comply with the specifications
- Other relevant information pertaining to the test being performed
- Any remarks and acknowledgment that an accredited testing laboratory was used

Applicable project requirements, tests, or analytical procedures used must be cited on the respective field form. The CQM will obtain and compile all test results, update the site-specific electronic tracking log and field documentation binder daily, and maintain the records onsite in the project files.

Testing and inspections performed and results will be summarized in the daily report for the date on which the test or inspection was performed. The updated electronic tracking log will be available for review by the CM, PM, SM, and program quality manager.

7.5 Testing Companies

Independent testing companies and testing laboratories that are authorized or certified to operate in the State of Illinois will be employed on this project. Prior to the start of the work, the name(s), facility information, qualifications, and certifications of the testing companies and laboratories will be acquired and maintained in the project files.

Laboratories performing chemical analysis of samples hold current accreditation under the EPA National Environmental Laboratory Accreditation Program and hold current certification by the State of Illinois.

Laboratories performing geotechnical testing will be participating in an accreditation program and will be certified to perform the specified analytical method.

Inspection

Receiving, in-process, and completion inspections will be performed during site preparation activities. An inspection is necessary for acceptance of all the items listed as DFOWs in Section 3. The DFOWs are summarized in Section 3.1. A completion inspection is required prior to final owner acceptance.

The CQM will be responsible for verifying the in-process inspections are documented in the daily reports and verifying the site-specific electronic tracking log is completed. The CQM is also responsible for verifying that the receiving inspections are documented in the daily report. The CQM is responsible for maintaining the punch list during the progress of the work.

8.1 Material Inspections

The CM will verify that the material and equipment received at the project site are inspected for compliance with the project requirements and are in good working order before being accepted for use on the site. Completion of any field tests will be documented in the Field Critical Inspection Log (Attachment A, Form A.14) and photographs taken will be documented in the Photograph Log (Attachment A, Form A.15) by the CQM. Any material or equipment not meeting the project requirements will be rejected or a written variance given by the CQM or designee. The performance and results of material and/or equipment inspections will be documented in the daily report.

8.2 Completion Inspections

8.2.1 Punch List Inspection

Punch list items should be addressed during the course of the work, and the punch list inspection will occur near the completion of work for each property. The CQM will inspect the work with the CM and develop a punch list of items that do not conform to the approved drawings and specifications. The punch list will include remaining items on the rework items list that were not corrected before the punch list inspection. The punch list will include the estimated date by which the deficiencies will be corrected. The CQM and CM will make follow-up inspections to ascertain whether deficiencies have been corrected. Once this is accomplished, the owner's representative will notify the owner that the feature of work is ready for prefinal inspection.

8.2.2 Prefinal Inspection before Final Client Inspection

Property-specific reviews will be performed after each property is restored to document the restoration and the condition of the surrounding area. Photographs and/or video of the restored work areas will be obtained to document the post-construction condition. A letter will be prepared for the property owner documenting the completion of the RA at the property. The current property owner will be asked to sign off that his or her property has been restored to the condition agreed to during the preconstruction meetings or to identify any outstanding issues to be addressed.

After the property owner has signed off on the RA, a prefinal inspection is required to check that all aspects of the work will be acceptable to the client and that punch list work has been completed. A prefinal inspection punch list may be developed because of the inspection. Each deficiency noted in the punch list will be referenced (applicable specification paragraph, drawing, etc.). The CQM will check that all items on this list are corrected prior to notifying the SM/CM that a final client inspection can be scheduled.

8.2.3 Final Client Inspection

The CQM, CM, PM, SM, other project management personnel, and client representative will attend the final client inspection. Other stakeholders may attend, too. The inspection will be considered closed when the work has been accepted by the client representative and acceptance has been documented and signed by all parties in a final inspection form.

Project Documentation

All project quality activities and submittals pertaining to the contract and contract documents and the CQAP will be documented. Table 9-1 summarizes the required field documentation.

9.1 Photographic Record

A project photographic record will be made and kept as part of the quality records. In addition to recording construction progress and “as-constructed” installation details, the photographic record will document deviations from design and nonconformance items. Each photograph will be electronically stamped with the date the photograph was taken and will be transferred daily to the network server for storage and viewing. Photographs will be organized in a folder with subfolders identified by specific construction activities and/or properties (for example, specific DFOWs, pre-remediation activities, or final restoration activities).

Digital cameras will be used by the project team and photographs electronically logged and filed for record purposes. The CQM, CM, or designated field personnel will maintain the photographic records.

9.2 Calibration Record

The CQM shall ensure that measuring and test equipment (M&TE) used at the site are of the proper type, range, accuracy, and tolerance to determine conformance to specified requirements. Project records must identify the M&TE used for an activity. Normally, manufacturer’s instructions are followed for calibration, calibration checks, and maintenance. The method and interval of calibration for each item is based on the type of equipment, stability characteristics, required accuracy, intended use, and other conditions affecting measurement control.

When M&TE is found to be out of calibration, an evaluation of the validity of previous inspection or test results and of the acceptability of items previously inspected or tested will be conducted and documented. Out-of-calibration devices shall be tagged or segregated and not used until they have been re-calibrated. If an item of M&TE is consistently found to be out of calibration, it will be repaired or replaced. Re-calibration will be performed whenever the accuracy of the equipment is suspect.

9.3 Field Documentation

The object of field documentation is to check that appropriate project information is documented in logbooks or on appropriate field forms during construction. Documentation is important for communicating with other staff members and other project representatives. The following regular QC observations, inspections, and records of general QC activities should be made:

- Record daily progress and associated QA/QC sampling (i.e., reference appropriate testing or inspection field form)
- Record construction operations, sequence, staging, etc.
- Maintain transportation and waste disposal records (Attachment A, Form A.12)
- Describe deviations from expected conditions, or unexpected problems and their resolution

The CQM will maintain a record of daily QC activities during construction in a field logbook, or on appropriate field forms during construction. The logbook and field forms will be available upon request for review. They will be used to record at least the following information:

- Date of entry
- Project name and location
- Time that work starts and ends every day
- Summary of weather conditions
- General description of work, size of work crew, and equipment and personnel onsite
- Duration and type of breaks
- Start time and duration of downtime resulting from equipment breakdown, weather, or emergencies
- Summaries of QC meetings and actions recommended to be performed
- Conversations with contractors, property owners, or residents
- QC testing equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data
- Decisions made regarding defective work or corrective measures implemented, or both
- Field tests
- Sampling activities

The field forms and the bottom of the last page of the daily field logbook will be signed or initialed. Each entry will be dated to show that notes are being entered daily.

A line-out will be placed on any part of an unused page. One-line strike-throughs will be used to show corrections to entries. The strike-throughs will be initialed and dated. No correction fluid may be used.

The field documentation will also be documented in the daily report and on appropriate field forms.

9.4 Daily Report

The daily report is the daily record of operations on the job site and will be kept current. It is an essential tool for recording and reporting the daily production, safety, and quality activities of the project. The reports are the official record of work performance and compliance with project plans, drawings, and specifications. Therefore, it is important that the reports are correct and timely.

The CM is responsible for preparing the daily report and submitting the reports to the PM. The PM and CM will provide operational information, and the HSM will provide information on the health and safety activities for the daily report. The report also includes reports from contractor to address, at a minimum, the following:

- Quality aspects of the project that is being performed by the contractor
- Scheduling and resource issues
- Site safety inspections and concerns
- Environmental concerns
- Job progress
- Control inspections
- Tests performed and their results
- Personnel and equipment onsite
- Material received

The CQM will review the daily reports for accuracy and completeness because these reports are used to prepare the final reports for the project. The PM will review the reports and check that the quality process is working on the project. The project quality manager will review the reports to check that the quality processes and systems are working on the program.

The daily report template is included in Attachment A (Attachment A, Form A.11). At a minimum, the following information should be included to the daily report:

- Tailgate safety meeting minutes
- Summary of work performed that day
- Labor hours for each contractor
- Equipment used onsite
- Changed conditions, delays, and conflicts encountered, including QC issues
- DFOWs
- Submittal status
- Inspection conducted and findings/result of inspection
- Test conducted
- Waste disposal summary

9.4.1 Monthly Progress Report

The CM or CQM will prepare a monthly progress report (Attachment A, Form A.16). The report will be transmitted to the QA team members and the SM. The monthly progress report will include, at a minimum, the following items:

- Work accomplished in the current month
- Work scheduled for the next month
- Project schedule: total days worked and total days remaining to completion of the current phase of work
- Problems encountered and resolutions, and associated schedule and budget impacts
- Construction budget: basic contract, and approved and denied change orders

9.4.2 Project Records

Records that are generated by the QC system must be maintained in an orderly manner. The CQM will make sure the project quality records are readily available for reference. The records should be arranged based on input from the document manager and include the following items:

- Submittals, including Submittal Register
- Daily reports
- Meeting minutes
- Inspection reports—Preparatory, Initial, and Follow-up Phases
- Punch list inspection results
- Pre-final and final inspection results
- Rework items lists
- Test results, including appropriate field forms and the site-specific electronic tracking log
- Chain-of-custody forms
- Construction change order and log
- Red-lined drawings/as-built drawing
- Field order and log
- RFIs arranged in numerical order and RFI log
- Nonconformance notices and corrective actions
- Certificates and qualifications
- Calibration records

- Photographs
- Correspondence (e-mails, conversation records, etc.)
- Dust/particulate readings (daily)
- Personal and perimeter air sampling results
- Waste tracking

Table 9-1. Reporting and Field Documentation Required
Old American Zinc Superfund Site Surrounding Properties

| Report or Documentation Requirement | Completed By | Delivered To | Frequency | Report Description |
|--|---------------------|-----------------------------------|---|--|
| Daily Report | CM | CQM | Daily | Documents daily construction and QC activity on the project site |
| Daily Field Logbook | CM/CQM/SSC | Server Only | Daily | Upload a scanned copy of the filed logbook daily |
| Daily Health and Safety Briefing Records | SSC | Health and Safety Manager | Daily | Documents daily health and safety “tailgate” meetings |
| Safe Behavior Observations | SSC/CM | Health and Safety Manager | Weekly | Records observation of contractor work and documents whether work was performed in a safe manner |
| Self-Assessment Checklists | SSC | Health and Safety Manager | Per HASP | Upload a scanned copy of the completed form at the frequency described in the HASP |
| Project Status Meeting Minutes | PM | Project Team | Weekly | Minutes of any project status meeting held |
| Submittal Register | CQM | Project Manager | As-needed | Update the submittal register to document receipt and review of contractor submittals |
| Photographic Record | CM | Project Manager | Daily | Photographic record showing construction progress, special situations |
| Calibration Record | CQM | Project Manager | Per manufacturer’s requirements/ documents | Documents equipment calibration and functionality |
| Daily QA/QC Verification Sheet | CQM | Construction Manager | Daily | Checklist to ensure appropriate documentation and filing procedures are implemented |
| Change Management Log | PM | Site Manager | As-needed | Tracking of out-of-scope activities that have been completed to monitor potential budget impacts |
| HASP | HSM | Health and Safety Manager | Once | Presents health and safety procedures to be followed while onsite |
| Contractor AHAs | Sub | SSC and Health and Safety Manager | Once | Presents activity hazards and mitigation measures to be followed by the contractor while onsite |
| Contractor Scopes of Work | Various | Project Manager | As-Needed | Presents bid packages as well as executed contracts |
| Permits | Various | Project Manager | Once | Required permits that must be completed before beginning construction activities |

Table 9-1. Reporting and Field Documentation Required
Old American Zinc Superfund Site Surrounding Properties

| Report or Documentation Requirement | Completed By | Delivered To | Frequency | Report Description |
|--|---------------------|--|------------------------------|---|
| CQAP | QC Manager | Project Manager | Once – as needed for updates | Describes the quality management process activities that will be implemented at the site during the construction activities |
| Risk Management Plan and Log | PM | Project Manager | As-Needed | Presents project risks as well as mitigation measures for construction activities; will be updated as various risks are identified or removed |
| Stormwater Pollution Prevention Plan | Various | Environmental Manager, Project Manager | Once | Provides site specific stormwater pollution prevention measures |
| Waste Management/Transportation and Disposal Documents | Field Team | Environmental Manager, Project Manager | As-Needed | Presents the results of the waste characterization activities including waste profiles and waste manifests and waste tracking log |
| Transportation and Disposal Plan | EM | Project Manager | Once | Describes environmental and waste management requirements for construction |

Project Closeout

Project closure is to ensure all pertinent project records are identified, labeled, and properly maintained for easy retrieval at a later date. Closeout activities will be conducted throughout the progress of the project. In this way, closeout at the end of the project can be completed in an efficient and timely manner as part of budgeted activities. Closure activities to be completed for this project will include the following:

- Conduct closeout meeting with project team, including client (when possible), and obtain feedback.
- Ensure all project documentation is filed including both electronically and hard copy.
- Consolidate, purge, and archive files.
- Summarize health and safety lessons learned and forward to HSM.
- Summarize quality lessons learned and forward to the EPA Program Construction QA Manager.
- Provide feedback and rewards/recognition to project staff throughout the delivery of this project.
- Submit regular invoices and reconcile all cost and revenue data in the financial accounting system after final payment.
- Close all project tasks and contractor purchase orders in the financial accounting system.
- Collect final payment, including outstanding accounts receivables.
- Notify client that the project is complete and formally closed.

References

ENTACT. 2008. *Baseline Ecological Risk Assessment for the Former American Zinc Plant Site, Fairmont City, Illinois*. August.

ENTACT. 2009a. *Final Remedial Investigation Report, Old American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2009b. *Baseline Human Health Risk Assessment for the Former American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

Glossary

Construction quality assurance plan (CQAP)—Establishes the guidelines and requirements to be used for project delivery to meet client objectives and achieve the standards. The primary objective of the CQAP is to document requirements, procedures, and methodology for quality assurance and quality control during construction of this project.

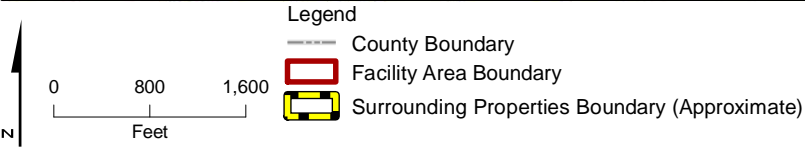
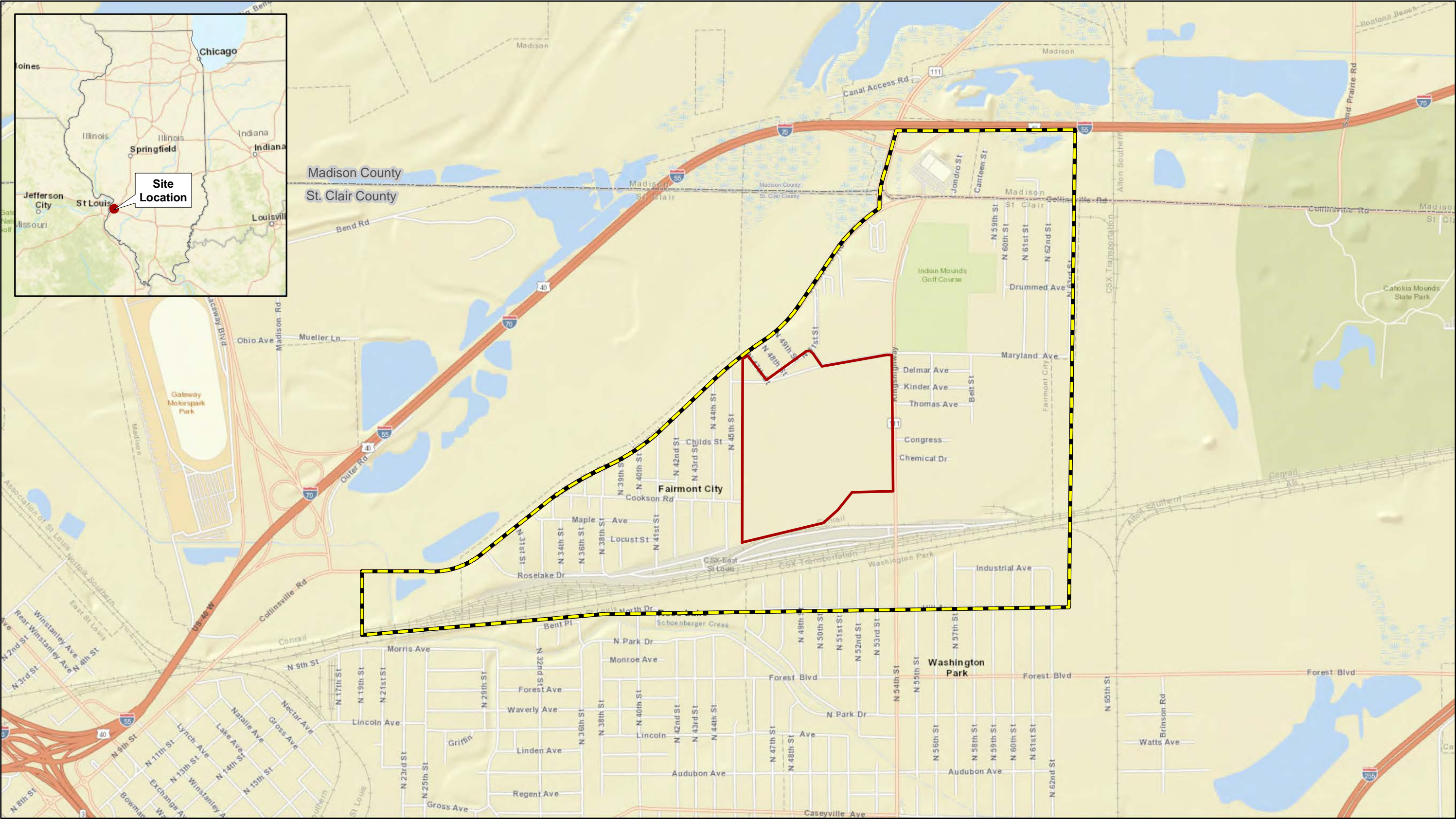
Quality assurance (QA)—Refers to the overall quality process. It is the assurance that the construction effort is conducted in a manner consistent with the design and meets the requirements of the project objectives.

Quality control (QC)—Refers to a planned system for monitoring, controlling, and documenting the quality of materials, supplies, and workmanship in a manner consistent with the execution plan and the drawings and specifications. Monitoring, controlling, and documenting are the active tasks associated with quality management. This document does not specifically address QC requirements.

Project instructions—Provide management instructions for construction operations, documentation, and reporting for work to be performed. The instructions provide guidance to the project team and clarify the site manager's expectations regarding personnel assignments (including level of effort, responsibilities, accountability, project goals, direction, processes, and procedures through the construction phase of the project. The project instructions define parameters for the implementation of the CQAP.

Construction quality submittals—Refers to submittals generated during or immediately prior to construction to demonstrate compliance with the project plans, drawings, and specifications. Construction quality submittals include daily reports, shop drawings, schedules, sample documentation, calibration records, photographs, product data, samples, field change request documentation, administrative and closeout submittals, and additional technical support data presented for review and approval.

Figures





Notes:
1. Basemap provided by ArcGIS Online World Street Map.


Figure 1-1
Site Location Map
Old American Zinc Plant Superfund Site
Fairmont City, Illinois


Attachment A

Forms

| | | | | | | |
|---|--|---------------------------------|---|----------------|--|----------------------|
|  Contract No: | | PREPARATORY PHASE REPORT | | REPORT NO: | REPORT DATE: REVISION NO: REVISION DATE: | TASK ORDER NO: |
| PROJECT NO: | | DEFINABLE FEATURE OF WORK: | | SITE/ACTIVITY: | | |
| PERSONNEL PRESENT | CLIENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/> | | | | | |
| | NAME | | POSITION | | COMPANY | |
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| SUBMITTALS | REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. | | HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/> | | | |
| | IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/> | | | | | |
| | IF NO, WHAT ITEMS ARE MISSING? | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| MATERIAL STORAGE | ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/> | | | | | |
| | IF NO, WHAT ACTION IS TAKEN? | | | | | |
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| SPECIFICATIONS | REVIEW EACH PARAGRAPH OF SPECIFICATIONS. | | | | | |
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| | DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. | | | | | |
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| PRELIMINARY WORK & PERMITS | ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE. | | | | | |
| | IF NO, WHAT ACTION IS TAKEN? | | | | | |
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|---|---|---------------------------------|--|----------------|--|----------------------|
|  CONTRACT NO: | | PREPARATORY PHASE REPORT | | REPORT NO: | REPORT DATE: REVISION NO: REVISION DATE: | TASK ORDER NO: |
| PROJECT NO: | | DEFINABLE FEATURE OF WORK: | | SITE/ACTIVITY: | | |
| TESTING | IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. | | | | | |
| | TEST | | FREQUENCY | | PERFORMER | |
| | | | | | | |
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| | WHEN REQUIRED? | | | | | |
| | | | | | | |
| | | | | | | |
| | WHERE REQUIRED? | | | | | |
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| | REVIEW TESTING PLAN. | | | | | |
| | | | | | | |
| | | | | | | |
| | HAVE TEST FACILITIES BEEN | | | | | |
| | TEST FACILITY | | | APPROVED? | | |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | | | |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | | | |
| SAFETY | ACTIVITY HAZARD ANALYSIS APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/> | | | | | |
| | REVIEW APPLICABLE PORTION OF EM 385-1-1. | | | | | |
| | | | | | | |
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| MEETING COMMENTS | CLIENT/AGENCY/STAKEHOLDER COMMENTS DURING MEETING. | | | | | |
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| OTHER ITEMS OR REMARKS | OTHER ITEMS OR REMARKS: | | | | | |
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| PROJECT QC MANAGER NAME | | PROJECT QC MANAGER'S SIGNATURE | | | DATE | |

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|--|---|---|-----------------------------|--|
|  Contract No: | | INITIAL PHASE CHECKLIST (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE: REVISION NO: REVISION DATE: |
| CTO NO: | | PROJECT NAME/LOCATION: | | REPORT NO: |
| PROJECT NO: | | PROJECT QC MANAGER: | | SITE H&S SPECIALIST: |
| SPEC SECTION: | | DEFINABLE FEATURE OF WORK: | | SCHEDULE ACT NO. INDEX # |
| PERSONNEL PRESENT | CLIENT REP NOTIFIED | HOURS IN ADVANCE: | | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| | NAME | POSITION | | COMPANY |
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| PROCEDURE COMPLIANCE | IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY MEETING. | | | |
| | SPECIFICATIONS, AND SUBMITTALS | | | |
| | COMMENTS: | | | |
| | | | | |
| PRELIMINARY WORK | ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN? | | | |
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| WORKMANSHIP | ESTABLISH LEVEL OF WORKMANSHIP. | | | |
| | WHERE IS WORK LOCATED? | | | |
| | | | | |
| | IS SAMPLE PANEL REQUIRED? | YES <input type="checkbox"/> | NO <input type="checkbox"/> | |
| | WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? | YES <input type="checkbox"/> | NO <input type="checkbox"/> | |
| | (IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE) | | | |
| RESOLUTION | RESOLVE ANY DIFFERENCES? | | | |
| | COMMENTS: | | | |
| | | | | |
| | | | | |
| | | | | |
| CHECK SAFETY | REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS | | | |
| | COMMENTS: | | | |
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|---|------------------------|---|--|--|------------|
|  Contract No: | | INITIAL PHASE CHECKLIST (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE: REVISION NO: REVISION DATE: | |
| CTO NO: | | PROJECT NAME/LOCATION: | | | REPORT NO: |
| PROJECT NO: | | PROJECT QC MANAGER: | | SITE H&S SPECIALIST: | |
| SPEC SECTION: | | DEFINABLE FEATURE OF WORK: | | SCHEDULE ACT NO. | INDEX # |
| OTHER | OTHER ITEMS OR REMARKS | | | | |
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| | | | | | |
| | | | | | |
| | | | | QC MANAGER | DATE |

| POTENTIAL IMPACT | | | |
|-----------------------------------|--------------|------------------------|--|
| Cost Impact: | | Schedule Impact: | |
| Activity Impacted: | | | |
| Work Days Impacted: | | Estimated Cost Impact: | |
| Supporting Documentation: | | | |
| REQUESTOR INFORMATION | | | |
| Requested By: | | | |
| | Printed Name | Title | |
| | | | |
| | Signature | Date | |
| | | | |
| RESPONSE DISPOSITION/CONCURRENCE | | | |
| Response Disposition/Concurrence: | | | |
| Further Action Required (if any): | | | |
| Response Provided By: | | | |
| | Printed Name | Title | |
| | | | |
| | Signature | Date | |

| | |
|---------------------|--|
| FORM NO. | A.4 [273] |
| TITLE: | Change Order |
| PURPOSE: | Provides contractual means for ordering modifications to the contract documents. |
| PREPARED BY: | Owner or Owner's Representative |
| DIRECTED TO: | Contractor |
| COPIES TO: | Owner, Owner's Representative, resident project representative |
| COMMENTS: | All revisions to the contract documents involving changes to the contract cost or contract times must be documented using this form. |



CHANGE ORDER

CHANGE ORDER NO.¹: _____

TO CONTRACTOR: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

OWNER'S REP: _____

The following modification(s) to the Contract are hereby ordered (use additional pages if required):

Reason for Modification(s):

Attachments (List Supporting Documents):

| Contract Amount or Price | | Contract Times (Calculate Days) | |
|--|----------|--|------------|
| Original | \$ _____ | Original Duration | _____ Days |
| Previous Change Order(s) (Add/Deduct) | \$ _____ | Previous Change Order(s) (Add/Deduct) | _____ Days |
| This Change Order (Add/Deduct) | \$ _____ | This Change Order (Add/Deduct) | _____ Days |
| Revised Contract Amount | \$ _____ | Revised Contract Time | _____ Days |

The Revised Contract Completion Date is:

_____ , _____

| Owner | Contractor | Owner's Representative |
|-------------|-------------|------------------------|
| By: _____ | By: _____ | By: _____ |
| Date: _____ | Date: _____ | Date: _____ |

¹ Number all Change Orders consecutively.

| | |
|---------------------|---|
| FORM NO. | A.8 [442] |
| TITLE: | Nonconformance Report |
| PURPOSE: | Written notice of deficiencies or rejection of work and a demand for corrective action. |
| PREPARED BY: | Owner's Representative or resident project representative |
| DIRECTED TO: | Contractor |
| COPIES TO: | Owner, Owner's Representative, document manager, project field file |
| COMMENTS: | Description should contain accurate locations and specification references. The document may figure strongly in later contractor claims. EJCDC General Conditions require that "deficiencies" in the work be corrected; while "rejected" work must be removed and replaced. |

ch2m

Nonconformance Report

TO CONTRACTOR: _____ NOTIFICATION NO: _____
PROJECT: _____ PROJECT NO: _____
OWNER: _____ TIME: _____ AM/PM
OWNER'S REP: _____ OBSERVER: _____

Pursuant to the GENERAL CONDITIONS of the Contract, you are hereby notified of the following noncompliance violation:

Specification Section: _____ Paragraph: _____

Violation:

Contract Requirement:

Violation Detected by: ☐ Test ☐ Inspection ☐ Observation

Noncompliance Work is: ☐ Defective ☐ Rejected

Estimated Value of Noncomplying Work: \$ _____

Defective work will be corrected. Rejected work will be removed and replaced. All costs shall be borne by the Contractor. Payment will not be made for defective or rejected work. Contractor will notify Owner's Representative when defective or rejected work is corrected.

Received by:

Owner's Rep: _____ Contractor _____
Authorized Representative

Date: _____ Title _____

Date

Distribution:

1. Owner
2. Owner's Representative
3. Document Manager
4. Field File

| | |
|---------------------|---|
| FORM NO. | A.8 [442] |
| TITLE: | Nonconformance Report |
| PURPOSE: | Written notice of deficiencies or rejection of work and a demand for corrective action. |
| PREPARED BY: | Owner's Representative or resident project representative |
| DIRECTED TO: | Contractor |
| COPIES TO: | Owner, Owner's Representative, document manager, project field file |
| COMMENTS: | Description should contain accurate locations and specification references. The document may figure strongly in later contractor claims. EJCDC General Conditions require that "deficiencies" in the work be corrected; while "rejected" work must be removed and replaced. |

ch2m

Nonconformance Report

TO CONTRACTOR: _____ NOTIFICATION NO: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____ TIME: _____ AM/PM

OWNER'S REP: _____ OBSERVER: _____

Pursuant to the GENERAL CONDITIONS of the Contract, you are hereby notified of the following noncompliance violation:

Specification Section: _____ Paragraph: _____

Violation:

Subcontract Requirement:

Violation Detected by: ☐ Test ☐ Inspection ☐ Observation

Noncompliance Work is: ☐ Defective ☐ Rejected

Estimated Value of Noncomplying Work: \$ _____

Defective work will be corrected. Rejected work will be removed and replaced. All costs shall be borne by the Contractor. Payment will not be made for defective or rejected work. Contractor will notify Owner's Representative when defective or rejected work is corrected.

Received by:

Owner's Rep: _____ Contractor _____
Authorized Representative

Date: _____ Title _____

_____ Date

Distribution:

1. Owner
2. Owner's Representative
3. Document Manager

4. Field File

DEFECTIVE/REJECTED WORK NOTIFICATION LOG

PAGE: 1

PROJECT: _____ PROJECT NO: _____

CONTRACTOR: _____

[illegible]



NOTIFICATION OF CORRECTION OF DEFECTIVE/REJECTED WORK

TO CONTRACTOR: _____ PREVIOUS NOTIFICATION NO: _____ DATE: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

OWNER'S REP: _____

The below listed Defective/Rejected work has been reinspected and the results of the Contractor's corrective actions have placed the work in compliance with the Contract Documents.

Description of Violation:

Description of Correction:

Owner's Representative: _____
Authorized Representative

Date: _____

Distribution:

1. Owner's Representative
2. Owner
3. Field File




DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

| | | | | | |
|-----------------------|--|------------------------|--|---------------|--|
| CONTRACT NAME: | | REPORT NO: | | | |
| CONTRACT NUMBER: | | REPORT DATE: | | | |
| TASK ORDER NUMBER: | | REVISION DATE: | | REV # | |
| PROJECT NAME: | | SITE NAME: | | | |
| PROJECT NUMBER: | | PROJECT DESCRIPTION: | | | |
| PROJECT MANAGER: | | FIELD QUALITY MANAGER: | | | |
| CONSTRUCTION MANAGER: | | H&S SAFETY Manager: | | | |
| AM WEATHER: | | PM WEATHER: | | MAX TEMP (F): | |
| | | | | MIN TEMP (F): | |

SUMMARY OF WORK PERFORMED

HEALTH AND SAFETY

| | | | |
|--|---|------------------------------|-----------------------------|
|  | Was A Job Safety Meeting Held This Date? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Were there any lost-time accidents this date? (If yes, attach copy of completed OSHA report) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Was a Confined Space Entry Permit Administered This Date? (If yes, attach copy of each permit) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Was Crane/Manlift/Trenching/Scaffold/HV Elec/High Work/Hazmat Work Done? (If yes, attach statement or checklist showing inspection performed) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Was Hazardous Material/Waste Released into the Environment? (If yes, attach description of incident and proposed action) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS:

SAFE BEHAVIOR OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – OWNER'S REPRESENTATIVE AND CONTRACTOR

| | |
|---------|-------------------|
| Company | Total Hours Today |
| | |
| | |



DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

TOTAL HOURS

EQUIPMENT ON HAND (Initial Inspection conducted to check if the Equipment is clean and in good working order/operable)

| Description of Equipment | Make/Model/Manufacture | Equipment ID Number | Inspection Performed By |
|--------------------------|------------------------|---------------------|-------------------------|
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EQUIPMENT COMMENTS (acceptance status, inspection findings, etc.):

PLANNED WORK

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED

(List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)

VISITORS AND DISCUSSIONS:

REGULATORY COMPLIANCE REPORT



DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

| | | | | | | | |
|--|------------------------|-------------------------|-----|-----------------------|-----|--------------|-----|
| Inspection Performed By: | | Signature of Inspector: | | | | | |
| Accumulation / Stockpile Area Inspected: | See Waste Tracking Log | | | | | | |
| No of Containers: | Na | No of Tanks | N/A | No of Roll-Off Boxes: | N/A | No. of Drums | N/A |

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

**DAILY QUALITY CONTROL REPORT**

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DEFINABLE FEATURES OF WORK STATUS

| DFOV No. | Definable Feature Of Work | Preparatory | Initial | Follow-Up |
|----------|---------------------------|--------------------------|--------------------------|--------------------------|
| 1 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

WAS PREPARATORY PHASE WORK PERFORMED TODAY?

☐ YES☐ NO

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

| PREPARATORY | DFOV No.(from list above). | Description | PREPARATORY PHASE REPORT NO. 02 |
|-------------|----------------------------|-------------|------------------------------------|
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INITIAL AND FOLLOW-UP FEATURE OF WORK COMMENTS

| DFOV No. (from list above) | Phase | Comment/Finding/Action |
|----------------------------|------------------------------------|------------------------|
| | Initial <input type="checkbox"/> | |
| | Follow up <input type="checkbox"/> | |
| | Initial <input type="checkbox"/> | |
| | Follow up <input type="checkbox"/> | |
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| | Initial <input type="checkbox"/> | |
| | Follow up <input type="checkbox"/> | |

REWORK ITEMS**REWORK ITEMS IDENTIFIED TODAY
(NOT CORRECTED BY CLOSE OF BUSINESS)****REWORK ITEMS CORRECTED TODAY
(FROM REWORK ITEMS LIST)**

| TASK/ ACTIVITY | DATE ISSUED | DESCRIPTION | TASK/ACTIVITY | CORRECTIVE ACTION(S) TAKEN |
|-------------------|-------------|-------------|---------------|----------------------------|
| | | | | |
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DAILY QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SAMPLING/TESTING PERFORMED:

| TASK/ACTIVITY TESTED | SAMPLING/TEST PERFORMED | TEST RESULTS (PASS/FAIL/CRITERIA) |
|----------------------|-------------------------|-----------------------------------|
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MATERIALS/EQUIPMENT INSPECTION (Materials received and inspected against specifications)

| DESCRIPTION/QUANTITY/VOLUME/WEIGHT | MAKE/MODEL/MANUFACTURER | MATERIAL LOT NUMBER | INSPECTION PERFORMED BY |
|------------------------------------|-------------------------|---------------------|-------------------------|
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SUBMITTALS INSPECTION / REVIEW:

| SUBMITTAL NO | SUBMITTAL DESCRIPTION | SPEC/PLAN REFERENCE | SUBMITTAL APPROVED? | COMMENT/REASON/ACTION |
|--------------|-----------------------|---------------------|--|-----------------------|
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | |
| | | | YES <input type="checkbox"/> NO <input type="checkbox"/> | |

LIST OF ATTACHMENTS (examples, as applicable: preparatory phase checklist, QC meeting minutes, safety meeting minutes, crane inspections, crane operation checklist, COCs, weight tickets, manifests, profiles, rework item list, testing plan and log, etc.):

On behalf of the Owner's Representative, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

PREPARER'S SIGNATURE

DATE

Form A.12 Waste Tracking Log

[illegible]

FORM A.13: SAMPLING AND TESTING LOG (to be updated during RA)

| USEPA Region 5 Construction Quality Assurance Plan Old American Zinc Superfund Site Remedial Action Fairmont City, IL | | | | | | | | | |
|--|------------------------------------|--|--------------|------------|-----------|--------------------------------------|---|---------------------|--|
| Line No. | Reference | Test Required | Date Sampled | Sampled By | Tested By | Location of Test (on-site/ off-site) | Frequency | Date Test Completed | Remarks |
| 1 | Section 21 23 13; Section 32 91 13 | Borrow source sampling - chemical analysis | | | | | 1 sample per every 1,000 cubic yards per material type | | Gravel and rock will not be submitted for analysis |
| 2 | Section 21 23 13; Section 32 91 13 | Borrow source sampling - gradation & proctor | | | | | 1 sample per every 1,000 cubic yards per material type | | Gravel and rock will not be submitted for gradation analysis |
| 3 | Section 32 91 13 | Borrow Source Sampling - fertility and salinity analysis | | | | | 1 sample per every 1,000 cubic yards per material type | | |
| 4 | Drawings | XRF Screening | | | | | As indicated on the drawings. | | Pending XRF screening results, demarcation fabric will be placed at the base of the excavation at 30" bgs. |
| 5 | Section 21 23 13 | Compaction testing | | | | | 2 tests per lift per yard area | | Compaction testing will not be performed in alleyways or on topsoil, unless directed by the owner's representative. If general backfill is classified as ML or CL, the moisture content of the material that is placed must be within -3% to 0% of optimum moisture content determined by ASTM D698 |
| 6 | Air Monitoring Plan | Personal air sampling | | | | | Daily for the first week of sampling. TBD based on sample results thereafter. | | Sample to be collected for worker with the greatest potential for COC exposure 24-hr TAT |
| 7 | Air Monitoring Plan | Perimeter air sampling | | | | | Daily | | Upwind and downwind locations Two locations per property Two locations at soil staging pile at FA, if present |
| 8 | Air Monitoring Plan | Dust monitoring | | | | | Daily | | Upwind and downwind locations Two locations per property Two locations at soil staging pile at FA, if present |
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| FORM A.13: SAMPLING AND TESTING LOG (to be updated during RA) | | | | | | | | | |
|--|-----------|---------------|--------------|------------|-----------|--------------------------------------|-----------|---------------------|---------|
| USEPA Region 5 Construction Quality Assurance Plan Old American Zinc Superfund Site Remedial Action Fairmont City, IL | | | | | | | | | |
| Line No. | Reference | Test Required | Date Sampled | Sampled By | Tested By | Location of Test (on-site/ off-site) | Frequency | Date Test Completed | Remarks |
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| <div>Field Critical Inspection Log</div> | | <div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div> | | | | | | |
| | | <div>Properties Addresses and Date Remedial Action Completed ([✓] inspection passed)</div> | | | | | | |
| | | | | | | | | |
| Onsite Daily Inspection Activities | | | | | | | Issues (Y/N) | Comments |
| 1 | Hold brief property-specific Tailgate meeting to identify potential changing hazards and reiterate excavation strategy for all personnel. | | | | | | | |
| 2 | Verify that utilities have been identified and marked prior to beginning excavation on each property. | | | | | | | |
| 3 | Verify that two points of continuous access can be maintained for residents when possible, with a one-point continuous access all the time. | | | | | | | |
| 4 | Document pre-existing conditions with photos paying particular attention to areas which could be damaged by construction. Record on Photo Log. | | | | | | | |
| 5 | Observe that residences and businesses are not cut off from vehicular traffic, unless special arrangements have been made and approved by the Owner's Representative. | | | | | | | |
| 6 | Observe that underground pipe, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations are protected, shored, braced, supported, and maintained. | | | | | | | |
| 7 | Observe that fire hydrants and water control valves are free from obstruction and available for use at all times. | | | | | | | |
| 8 | Observe that construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris do not enter sewers, pump stations, or other sewer structures. | | | | | | | |
| 9 | Observe that the erosion control measures are installed at the residential properties, alleyways, staging area, and at the Soil Staging Pile according to best management practices and the Stormwater Pollution Prevention Plan (SWPPP). | | | | | | | |
| 10 | Observe that barricades are used as required by the Vehicle Code and in sufficient quantity to safeguard public and the Work. | | | | | | | |
| 11 | Observe that earthwork and trucking operations are conducted to minimize dust and adhere to applicable environmental regulations for dust prevention. | | | | | | | |
| 12 | Observe that construction equipment is only operated between the hours of 7:00 a.m. and 6:00 p.m., or hours approved by the Township/City/Village. | | | | | | | |
| 13 | Observe that street closings or restrictions comply with Laws and Regulations and with written permission of proper authority. | | | | | | | |
| 14 | Observe that the work is conducted in such a way that interferes as little as possible with public travel, whether vehicular or pedestrian. | | | | | | | |
| 15 | Observe that the mailboxes are moved to temporary locations accessible to Postal Services. | | | | | | | |
| 16 | Observe that water control systems of sufficient size and capacity are provided, operated, and maintained to limit water collection in excavations and permit backfilled to final grade. | | | | | | | |
| 17 | Observe that excavation water is discharged, only as approved and if removed from above an impervious liner, in a manner that will not cause contamination, erosion, or flooding, or otherwise damage existing facilities, completed Work, or adjacent property. All contact excavation water is to be contained and transported to the FA for discharge or use at the FA, at the direction of the Owner's Representative. | | | | | | | |
| 18 | Observe that field equipment that has come into contact with any potentially contaminated material is decontaminated before leaving the site. | | | | | | | |
| 19 | Observe that all field equipment, temporary facilities, and other miscellaneous items (for example, barricades, caution tapes, and signs) resulting from or used during field operations are removed and properly disposed of offsite prior to demobilization. | | | | | | | |
| 20 | Observe that excavation areas are surveyed to establish preconstruction control points and existing elevations. | | | | | | | |
| 21 | Observe that the site preparation includes protection of active migratory bird nests, trees, wetlands, shrubs, vegetations or permanent structures and removal of encumbrances to soil excavation. | | | | | | | |

| | | | | | | | | |
|--|--|--|--|--|--|--|--------------|----------|
| <div>Field Critical Inspection Log</div> | | <div><div><div>ch2m</div><div>SM</div></div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div><div>Properties Addresses and Date Remedial Action Completed ([✓] inspection passed)</div></div> | | | | | | |
| Onsite Daily Inspection Activities | | | | | | | Issues (Y/N) | Comments |
| 22 | Observe that an orange plastic construction barrier fence, minimum 36-inch height, shall be installed around the excavation and work areas using steel "T" post spaced at 6-foot centers to separate pedestrian traffic from the work. The fence will be secured around open excavations before the end of each work day. | | | | | | | |
| 23 | Observe that stormwater runoff control is installed, and erosion controls in place at the residential properties, alleyways and the Soil Staging Pile according to the Stormwater Pollution Prevention Plan (SWPPP) and best management practices prior to excavation. Stormwater runoff controls will, at a minimum, prevent migration to storm sewers, street gutters, streets, sidewalks, and driveways. Observe that an at least 6-mil polyethylene black cover, or approved equivalent, per the Specifications is secured in the excavation prior to rain events. | | | | | | | |
| 24 | Observe that obstructions, including outdoor play equipment, benches, and other encumbrances to soil excavation, shall be tagged and removed from the property or relocated to an area of property unaffected by Work. | | | | | | | |
| 25 | Observe that obstructions removed from the property are securely stored and returned upon completion of restoration. | | | | | | | |
| 26 | Observe that ¾ inch plywood, or approved equivalent, is placed on the ground surface if small equipment will travel through the tree drip-line to access the excavation area. The plywood will be secured to the ground to prevent its movement. | | | | | | | |
| 27 | Observe that the Contractor has contacted JULIE to identify utilities before work begins at each property or alleyway. The Contractor will verify the completion of the locates and submit documentation to the Owner's Representative a minimum of 3 days prior to beginning any invasive activities at each property. | | | | | | | |
| 28 | Observe that the Contractor records the location of the utilities on the property sketch for permanent documentation. | | | | | | | |
| 29 | Observe that construction equipment noise is below the noise thresholds in 35 IAC Part 901.102 and Part 901.104 and is only operated between the hours of 7:00 a.m. and 6:00 p.m., or hours approved by the Township/City/Village. | | | | | | | |
| 30 | Observe that appropriate excavation methods are determined on a property-specific basis. Contractor will determine the method(s) to access and excavate the properties in accordance with the specifications. | | | | | | | |
| 31 | Observe that if unidentified archaeological deposits are uncovered during excavation, protocol is implemented as outlined in the Unanticipated Discovery Plan (UDP) to protect archaeological and cultural resources. | | | | | | | |
| 32 | Observe that the over-excavation tolerance is plus 0.1 foot, and under-excavation tolerance is minus 0.0 foot. Owner's Representative may limit the depth of excavation if it is believed that further excavation may result in damage to structures or safety hazards. | | | | | | | |
| 33 | Observe that XRF screening is performed at properties being excavated to the maximum sampling depth and in landscape areas. Reference Drawings for XRF requirements. If XRF screening results indicate COC levels above screening criteria at 30-inches bgs, demarcation fabric will be placed along the bottom of the entire excavation. | | | | | | | |

| | | | | | | | |
|--|---|--|--|--|--|--|--------------|
| <div>Field Critical Inspection Log</div> | | <div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div> | | | | | |
| | | <div>Properties Addresses and Date Remedial Action Completed ([✓] inspection passed)</div> | | | | | |
| | | | | | | | Issues (Y/N) |
| 34 | Observe that the limits of construction for soil excavation are as follows: One (1) foot away from permanent structures and fences and sloping away from the structure at a maximum slope of 1 horizontal to 1 vertical. One (1) foot away from property lines unless the excavation continues onto the neighboring property and the adjacent Property Owner has provided access. Excavation may proceed across a property line into a right-of-way if it serves as part of that yard. When the Contractor is satisfied that an excavation is to the specified lines and grades, the Contractor will notify the Owner's Representative for authorization to proceed with backfilling of the excavation. | | | | | | |
| 35 | Observe that adequate controls are in place to avoid unauthorized over-excavation. | | | | | | |
| 36 | Observe that the Contractor immediately notifies the Owner's Representative if latent differing site conditions are encountered during construction. Such conditions include french drains, drain tile, unknown electrical and plumbing lines, and other similar conditions | | | | | | |
| 37 | Observe that the manual excavation, or other approved method, is performed around tree roots as specified below: Within 8 feet of the tree trunk, excavation shall be limited to manual excavation, or other approved method. Manual excavation (or other approved method) will expose and tunnel under woody roots 1 inch in diameter or greater to preserve the roots. Manual excavation (or other approved method) will follow the roots 1 inch in diameter or greater to the horizontal extent of the excavation to expose the roots. At a distance greater than 8 feet from the trunk, mechanical excavation will be allowed using a mini excavator, or approved equivalent, and spotter to remove soils between 1 inch diameter or larger roots exposed by manual excavation (or other approved method). If roots are damaged, Contractor will perform corrective pruning to create a clean cut and promote quick wound closure and regeneration. | | | | | | |
| 38 | Observe that trees and plantings that are not being removed are protected and appropriate measures are taken when excavating around the plants, including avoiding or minimizing damage to roots systems. | | | | | | |
| 39 | Observe that Contractor provides and maintains temporary barricades around trees. | | | | | | |
| 40 | Observe that the Contractor employs manual excavation, or other approved method, as specified to minimize tree injury. | | | | | | |
| 41 | Observe that the exposed roots are temporarily covered with wet burlap, and the burlap moist is maintained until soil is replaced around roots. | | | | | | |
| 42 | Observe that the vegetation is watered, as necessary, to maintain health. | | | | | | |
| 43 | Observe that the materials are not stockpiled or permit traffic within drip lines of trees. | | | | | | |
| 44 | Observe that in event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, treat damage by corrective pruning, bark tracing, application of a heavy coating of tree paint, and other accepted horticultural and tree surgery practices. | | | | | | |
| 45 | Observe that the Contractor performs work as outlined in the approved Transportation and Disposal Plan. | | | | | | |
| 46 | Observe that stockpiled excavated material is covered and protected during inclement weather. | | | | | | |
| 47 | Observe that the excavated materials are not be stockpiled overnight except in the approved Soil Staging Pile with proper controls in place. | | | | | | |
| 48 | Observe that the stockpiled and staging pile materials are identified by clearly worded, visible from all directions and readable sign posts. | | | | | | |
| 49 | Observe that the temporary stockpiles are removed before the end of construction activities each day. | | | | | | |
| 50 | Observe that the excavated materials are not stockpiled near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line. | | | | | | |
| 51 | Observe that the protection against stockpile runoff is implemented in accordance with the approved SWPPP. | | | | | | |

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|------------------------------------|---|---|--|--|--|--|--------------|----------|
| Field Critical Inspection Log | | <div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div> <div>Properties Addresses and Date Remedial Action Completed ([✓] inspection passed)</div> | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Onsite Daily Inspection Activities | | | | | | | Issues (Y/N) | Comments |
| 52 | Observe that manual excavation, or approved equivalent, is performed within 18 inches of approximate underground utility markings to verify actual location of the utility. | | | | | | | |
| 53 | Observe that specified lines and grades and sampling and analysis indicate extents of excavation have been reached prior to authorizing backfilling of the excavation. | | | | | | | |
| 54 | Observe that the trucks are fully loaded, within allowable hauling weight limits, prior to transporting the excavated materials. | | | | | | | |
| 55 | Observe that a temporary ground covering, 6 mil polyethylene or equivalent, extends a minimum of 2 feet under trucks to minimize the potential for soil to spill into roadways or other areas not requiring remediation. | | | | | | | |
| 56 | Observe that a temporary ground covering, 6 mil polyethylene or equivalent, extends over sidewalks, driveways or similar surfaces adjacent to excavations from the start of excavation through the completion of backfill to minimize the potential tracking of soil. Soil spilled onto these surfaces will be removed using dry decontamination methods. | | | | | | | |
| 57 | Observe that street cleaning is performed daily from the start of excavation through completion of backfill. Observe that a final street cleaning is performed prior to the removal of temporary erosion control measures. | | | | | | | |
| 58 | Observe that all moving, handling, and loading of excavated material, along with sequencing the activities is in accordance with the Contractor's approved Transportation and Disposal Plan. | | | | | | | |
| 59 | Observe that the exterior of each transportation vehicle and load of waste is visually inspected and all loose soil/material removed and collected before leaving the site. | | | | | | | |
| 60 | Observe that each truckload is covered with a fully functioning tarp system that satisfies local, county, state and federal regulations before leaving the site and during transportation. | | | | | | | |
| 61 | Observe that the transportation of nonhazardous wastes is completed by a transporter licensed for commercial transportation of Special Waste in the State of Illinois. | | | | | | | |
| 62 | Observe that the quantities of waste disposed of offsite is recorded by documented weighing at the approved disposal facility. Copies of haul tickets will be signed and provided to Owner's Representative on a daily basis. | | | | | | | |
| 63 | Observe that the quantities of waste staged in the Soil Staging Pile and/or Consolidation Area at the FA are estimated and documented per property in the Waste Tracking Log. The Waste Tracking Log will also identify where excavated soil was placed at the FA (i.e. Soil Staging Pile or Consolidation Area). Copies of the Waste Tracking Log will be provided to Owner's Representative on a daily basis. | | | | | | | |
| 64 | Observe that the Contractor complies with the following procedures when transporting wastes offsite and to the FA: Transporting waste materials will comply with requirements of federal, state and local regulations. Minimize impacts to general public traffic. Repair road damage caused by construction and/or hauling traffic. Clean up material spilled in transit. Follow safety and spill response procedures. Use sealed trucks transporting liquids or wet materials. No materials from other projects shall be combined with materials from this site. Comply with approved Transportation and Disposal Plan. | | | | | | | |
| 65 | Observe that the site restoration includes the installation and inspection of erosion control blanket over topsoil in the excavation areas, if required. | | | | | | | |
| 66 | Observe that work does not commence until the Owner's Representative has approved materials and methods proposed for restoration. | | | | | | | |
| 67 | Observe testing of existing systems in or near excavation areas, such as irrigation systems, electrical, plumbing, or others to verify proper function. | | | | | | | |

| | | | | | | | | |
|-------------------------------|---|--|--|--|--|--|--------------|----------|
| Field Critical Inspection Log | | <div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div> | | | | | | |
| | | Properties Addresses and Date Remedial Action Completed ([✓] inspection passed) | | | | | | |
| | | | | | | | Issues (Y/N) | Comments |
| 68 | Observe that the Contractor reinstalls removed obstructions, repairs damage to permanent structures, and repair or replacement of property disturbed or damaged during or as a result of the Contractor's construction activities. | | | | | | | |
| 69 | Observe that temporary controls are removed with the exception of erosion control blankets. | | | | | | | |
| 70 | Observe that the Contractor reinstalls landscaping features or other obstructions removed from the area. Materials will be reinstalled to an equivalent or better condition. | | | | | | | |
| 71 | Observe that the Contractor returns items to the property from storage area after reinstallation of removed fencing sections. Any items damaged by the Contractor must be repaired or replaced as directed by Owner's Representative. The condition of equipment and materials prior to removal from the property will be based on photographic and video documentation. | | | | | | | |
| 72 | Observe that the Contractor repairs damage to private property, including but not limited to, fencing, private utilities, and permanent structures, in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Owner's Representative. | | | | | | | |
| 73 | Observe that repairs are performed to an equivalent or better quality than the original. Repairs will be made with like-kind materials with matching finishes as possible. | | | | | | | |
| 74 | Observe that the Contractor repair sidewalks, curb and gutter, trees or other Township/City/Village property damaged by the Contractor, or as a result of their construction activities. Repairs will be performed in accordance with the Illinois Department of Transportation (IDOT) Standard Specifications for Construction, St. Clair County, Canteen Township, and/or City of Washington Park, Fairmont City, and/or City of St. Louis Code of Ordinances, or other applicable ordinances or regulations. | | | | | | | |
| 75 | Observe that the applicable utilities are notified if damage occurs during the Work. | | | | | | | |
| 76 | Observe that seed is placed on the specified areas within 2 calendar days after topsoil preparation. | | | | | | | |
| 77 | Observe that the erosion control blankets are rolled out or laid in parallel to the direction of water flow (if applicable), with the netting on top. | | | | | | | |
| 78 | Observe that the erosion control blankets are spread evenly without stretching, and so the fibers are in direct contact with the soil over the entire area. | | | | | | | |
| 79 | Observe that the adjacent strip edges of the erosion control blankets are overlapping each other at least 102 mm (4 inches). Strip ends shall overlap each other at least 178 mm (7 inches). A minimum of 1 staple per square meter shall be inserted flush with the ground surface to anchor to the soil surface. | | | | | | | |
| 80 | Observe that the leading edge of the erosion control blanket at top of slope in a 6-inch by 6-inch trench for steep slopes and ditches is buried to prevent water from getting under the mat. | | | | | | | |
| 81 | Observe that the temporary controls are removed from the residential property after topsoil preparation is complete, seed has been placed, or erosion control blanket has been installed, and other property features have been restored. | | | | | | | |
| 82 | Observe that the erosion control measures, such as inlet protection, are removed from the residential area by the Contractor after the final street cleaning is performed in accordance with specification 01 50 00. | | | | | | | |
| 83 | Observe that erosion control measures will remain in place at the Soil Staging Pile (if all excavated soil has not been placed into the Consolidation Area) after completion of RA activities in the surrounding properties, which will be maintained and inspected by the EPA after demobilization. | | | | | | | |
| 84 | Observe that debris, rubbish and excess materials are removed from the property for storage at the staging area or disposal, as appropriate. Local regulations regarding hauling and disposal shall apply. | | | | | | | |

| | | | | | | | | |
|--|--|--|--|--|--|--|--|--------------|
| <div>Field Critical Inspection Log</div> | | <div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div><div>Properties Addresses and Date Remedial Action Completed ([✓] inspection passed)</div></div> | | | | | | |
| | | | | | | | | Issues (Y/N) |
| 85 | Observe that topsoil is not placed when subsoil or topsoil is frozen, excessively wet, or otherwise detrimental to the Work. | | | | | | | |
| 86 | Observe that the topsoil is not placed on subsoil with standing water or unstable subgrade conditions. Topsoil will be placed in a manner that does not disturb or damage surrounding structures or utilities. | | | | | | | |
| 87 | Observe that General Fill is compacted to 80 to 90 percent relative compaction as determined in accordance with ASTM D698. | | | | | | | |
| 88 | Observe that General and Gravel Fill in alleyways are placed compacted in to the satisfaction of the Owner's Representative. | | | | | | | |
| 89 | Observe that topsoil is fine graded to eliminate rough or low areas and maintain levels, profiles, and contours of subgrade, and that sloping is out and away from structures. | | | | | | | |
| 90 | Observe that stones exceeding 1 inches, roots, sticks, debris, and foreign matter are removed during and after topsoil placement. | | | | | | | |



Photo Log

[illegible]



MONTHLY PROGRESS REPORT

DATE: _____

PROJECT: _____ PROJECT NO: _____

CONTRACTOR: _____

CONTRACT AMOUNT: _____ AMOUNT THIS PERIOD: _____

AMOUNT TO DATE: _____ % COMPLETE: _____

WORK PROGRESS

Current:

Projected:

Delivery Problems and/or Delays. Corrective Action Taken:

Potential Modifications:

Potential Claims:

(Owner's Representative).

Attachment B Submittal Register

Submittal Register

[illegible]

Attachment C
Change Management Tracking Log

USEPA - Region 5

[illegible]

Attachment D
Air Monitoring Plan

Air Monitoring Plan: Old American Zinc Residential Soil Contamination Site

Arsenic/Cadmium/Lead/Zinc and Total Particulate Air Sampling Plan

Based on chemicals of concern exposure modeling, it has been determined that arsenic and lead total particulates are the primary contaminants that could cause the primary employee exposure concerns.

Personal and perimeter air sampling for arsenic/cadmium/lead/zinc will be performed during upcoming excavation activities at the Old American Zinc Plant Superfund Site – Surrounding Properties. All integrated samples will be collected and analyzed in accordance with the National Institute of Occupational Safety and Health (NIOSH) Method 7300 or equivalent for elements (arsenic, cadmium, lead, and zinc) by inductively coupled plasma (ICP) and analyzed by a laboratory that is accredited by the American Industrial Hygiene Association for that method. Real-time perimeter dust monitoring will also be performed with action levels based on maximum concentrations of contaminants for conservative action levels.

Personal samples will be collected from site personnel. The contractor is responsible for collecting personal samples from contractor staff and performing perimeter monitoring at residential properties and the Facility Area (FA) excavated soil staging pile during excavation activities as required by this sampling plan, health and safety plans (owner representative's and contractor's), and any applicable federal, state, or local regulations. The contractor is responsible for performing real-time dust monitoring during intrusive activities at the property and FA excavated soil staging pile, beginning with excavation, and continuing through backfill and topsoil placement. If excavated soil is placed directly into the consolidation area, air monitoring around the FA excavated soil staging pile will not be performed.

No person will cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.

Personal Air Sampling

Sampling Approach

A personal air sample will be collected for a worker with the greatest potential exposures during the excavation activities for each property during the first week of excavation activities. It is anticipated that a 24-hour turnaround on the laboratory analysis of these samples will be obtained.

Based on the results of the first week of personal air sampling, the sampling plan will be reviewed to evaluate the effectiveness of the monitoring for the remainder of the field event. If an action level is reached for any compound, monitoring will continue at first-week levels. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, (4) level of work activity anticipated, and (5) correlation of real-time dust monitoring (see below) with actual personal air sampling results obtained.

Sampling Method

Personal air samples will be collected in accordance with NIOSH Method 7300 or equivalents using a 0.8-micrometer cellulose ester membrane filter. A calibrated sampling pump will be used to draw a representative air sample from the breathing zone of the employee through the filter and collect particulate on the filter. The calibrated sampling pumps will sample within ± 5 percent of the recommended flow rate of 1 to 4 liters per minute. Sample collection time and volume will be in accordance with referenced NIOSH method.

Perimeter Air Sampling

Sampling Approach

Daily perimeter air samples for arsenic, cadmium, lead, and zinc, will be collected at two locations per property. At the FA excavated soil staging pile, two perimeter air samples will also be collected daily throughout the excavation activities, if excavated soil is not placed directly into the consolidation area. The two sampling locations at residential properties and at the FA soil staging pile will be selected to evaluate both ambient (i.e., upwind) and downwind levels. The samples will be collected in accordance with NIOSH Methods 7303 (Elements by ICP) and 7105 (Lead by Graphite furnace atomic absorption spectrophotometry) or equivalent NIOSH Method 7300 by drawing a known volume of the air through a 0.8-micrometer mixed-cellulose ester filter and collect particulate on the filter using a calibrated personal sampling pump. The calibrated sampling pumps will sample within ± 5 percent of the recommended flow rate of 1 to 4 liters per minute. Samples will be collected for an 8-hour period or a full-shift period, resulting in a total air volume of approximately 320 liters. Tygon or other flexible tubing will be used for connecting to the pumps. Samples will be handled under standard chain-of-custody procedures for laboratory analysis. The quickest laboratory turnaround time for results will be confirmed and used.

Real-time Perimeter Dust Monitoring

Sampling Approach

Real-time dust monitoring will be performed using MIE DataRAM 4000 dust monitors, or equivalent, throughout the duration of intrusive activities beginning with excavation and continuing through backfill and topsoil placement at each residential property and the FA excavated staging pile. Each day, a DataRAM will be placed in a location representative of possible worst-case exposure potential for employees and at a location to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone at the construction activities at the discretion of the site coordinator. Perimeter particulate monitoring will have DataRAM alarm set at 0.50 milligrams per cubic meter, and at no time would exceed 1.0 milligrams per cubic meter. The contractor will record the DataRAM readings every minute and personnel will check readings every 30 minutes, along with a brief description of the activity taking place. Additionally, the DataRAM results will be downloaded each day so that the fluctuations in total dust concentrations can be observed.

Notification of Personal and Perimeter Air Monitoring Results

The analytical laboratory will submit sample results directly to the contractor for each of their personnel included in this air sampling program. The contractor will comply with Occupational Safety and Health Administration standards 1910.120 and 1910.1026 regarding employee notification and recordkeeping requirement and will provide the owner's representative with a weekly summary of results and real-time notification of any exceedances.

Recordkeeping

Documentation of air monitoring and air sampling must be retained as part of the project file, which includes the following:

- Calibration and industrial hygiene sampling logs
- Instrument reading
- Weather conditions
- Sample location (breathing zone, headspace) and upwind and downwind locations at residential properties and the FA
- Operator's name and signature
- Date and time of the samples, copies of chain of custody forms
- NIOSH methods used
- Laboratory analysis reports
- Copies of personnel notifications of results

Appendix D
Engineer's Estimate of
Construction Cost

Final Basis of Estimate Old American Zinc Plant Superfund Site— Surrounding Properties Remedial Design

Fairmont City, St. Clair County, Illinois

EPA WA No. 224-RDRD-B5A1

Contract No. EP-S5-06-01



Project Name: Old American Zinc Plant Superfund Site – Surrounding Properties

Class Estimate: Class 2 Project Budget Estimate

Project Manager: Rachel Grand/STL

Senior Technical Consultant: Dan Plomb/MKE

Estimated By: Mark Allen/DEN

Estimate Date: December 13, 2018

1.1 Purpose of Estimate

This final basis of estimate is included as Appendix D to the *Final Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties Revision 1* (CH2M 2018) and should only be viewed in conjunction with the revised final basis of design report. This budget estimate provides an engineer's estimate of budgetary costs for the excavation, backfill, and restoration of 67 properties and 9 alleyways in the properties surrounding the Facility Area (FA). Assumptions that apply to this estimate are outlined in the following sections.

This Basis of Estimate should be reviewed in conjunction with the Microsoft Excel spreadsheet (Attachment A) that outlines the anticipated costs for the project.

1.2 General Project Description

The Old American Zinc (OAZ) Plant Superfund Site is located in the Village of Fairmont City in St. Clair County, Illinois. The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east. The site also includes properties near the FA (surrounding properties), primarily in Fairmont City.

OAZ conducted zinc-smelting operations at the FA from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stock piles originally encompassed an area of 15 acres. The FA, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the FA until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to buildup and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA covers an area of 125 acres, with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Remediation of the OAZ Plant Superfund Site includes both on-FA and off-FA activities. The cost estimate described herein is for the surrounding properties remedial action only (off-FA). Samples collected during various investigations over many years indicate that over 100 properties and 15 alleyways exceeded the cleanup levels for at least one contaminant of concern. Properties and alleyways with elevated lead concentrations were prioritized for removal action and are not included in this design and cost estimate. Sixty-seven properties and 9 alleyways requiring remediation are included in this design and cost estimate.

1.3 Project Objective

EPA's selected remedy for the site is Alternative 4A, as described in the Record of Decision (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The remedial action will be performed by EPA's (owner's) representative and a primary contractor (contractor). There will also be supporting contracts for laboratory analysis, waste disposal (if needed), etc. This basis of estimate was created based on the following major activities:

- Mobilization
- Site preparation
- Excavation of soil above applicable cleanup levels from off-FA properties
- Transportation of excavated soils to the FA for direct placement into the consolidation area

- Depending on construction sequencing, excavated soils may be placed in an excavated soil staging pile at the FA (soil staging pile)
- Containerizing decontamination liquids and water that accumulates in unlined excavations for dust suppression at the FA in areas that have not been remediated
- Backfill and compaction
- Site restoration and maintenance
- Demobilization

1.4 Administration/Subcontractor Oversight

This budget estimate assumes that, in addition to the contractor cost shown on the Class 2 Cost Estimate Summary, administration and oversight by the owner's representative will be necessary. The administration and contractor oversight cost percentage has been estimated based on the EPA 2000 Cost Guidance (EPA 2000) document, Region 5 contract, and site experience executing similar work at other residential RA projects.

1.5 Assumptions

This estimate is based on the quantities, sizes, and calculations presented in the *Final Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties Revision 1* (CH2M 2018). Section 3.1 of the final basis of design report presents key design assumptions, as well as quantity assumptions. The following exclusions and assumptions supplement Section 3.1 of the basis of design report and are presented as conditions for the attached budget estimate:

- The estimate is based on 2018 pricing with an escalation applied for 2019. Based on discussions with the EPA, this work is planned to begin sometime during the spring of 2019. A detailed schedule has not been developed at this time because remedial action activities require review and a start determination from EPA.
- Drawings used for this estimate were prepared by CH2M (engineer; basis of design report, Appendix A).
- This budget estimate is not an offer to contract for and/or procure the work but does represent the engineer's best opinion of cost before bidding documents are developed and released to prospective contractors.
- The budget cost estimate does not include cost allowance for unforeseen site conditions.

1.6 Overall Costs

The following is a summary breakdown of the costs. See Attachment A for additional detailed information.

| Low Range | ESTIMATE RANGE | High Range |
|-------------|-----------------|-------------|
| -15% | Total \$ | +20% |
| \$3,446,700 | \$4,054,900 | \$4,865,900 |

1.7 Cost Factors

The following cost factors were applied to the estimate:

| | |
|---|-------|
| Estimate Contingency | 15% |
| Bond/Insurance | 2.50% |
| Owner's Representative Markup | 5% |
| Administration and Contractor Oversight | 25% |
| Escalation | 3% |

Attachment A contains the detailed budget estimate.

1.8 Estimate Classification

This budget estimate is considered a Class 2 estimate as defined by AACE International. It is considered accurate to -15%/+20% based on the current level of the design documents.

The budget estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final cost of the project will depend upon competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein.

1.9 Cost Resources

The following is a list of the various cost resources used in the development of the rough order of magnitude estimate:

- CH2M engineers' estimate with assumptions as noted in supporting tables.
- RSMeans 2018 Heavy Construction Cost Data as noted in the budget estimate.
- Estimator judgment and experience.
- Quantity takeoff of anticipated activities.
- Quantities have been priced using a detailed built-up approach. Crews were built up using Davis-Bacon labor rates for St. Clair County, Illinois. Construction equipment was based on 2018 Blue Book rental/cost recovery rates for Illinois. Materials were based on budgetary quotations.
- Production rates were based on the CH2M estimator's experience. Other items were based on RSMeans Cost Data and bids received for recent similar work.
- The basic detailed level of the estimate is called the Direct Cost Report.
- The Direct Cost Report is broken down by bid item and activities that are different items of work required to execute the project. Each activity is estimated on a direct cost basis as either a detailed level of effort method or a lump sum unit price method. Activities contain all resources, including labor hours, equipment, materials, and services, to accomplish that activity.

Oversight labor unit prices reflect a burdened rate, including the following: workers compensation, unemployment taxes, Fringe Benefits, and medical insurance.

1.10 Estimate Methodology

This cost estimate is considered a bottom rolled-up type of estimate with detailed direct cost breakdown of labor, materials, and equipment. Non-binding cost quotations for materials and services were obtained when possible. Estimator judgment and experience were used to price materials and services whenever non-binding cost quotations were not available. The estimate may include allowance cost for certain components of the estimate (that is, weather delays, production restraints, etc.).

1.11 Labor Costs

This budget estimate is based upon current local knowledge of construction labor rates. Labor costs were estimated using Davis-Bacon labor rates for St. Clair County, Illinois.

1.12 Sales Tax

This budget estimate does not include sales tax separately; cost for applicable sales tax is included in the individual line items.

1.13 Works Cited

CH2M HILL Engineers, Inc. (CH2M). 2018. *Final Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties Revision 1*. December.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

U.S. Environmental Protection Agency (EPA). 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. July.

Attachment A

Budget Estimate

Appendix D. Unit Rates for Anticipated Property Excavation, with Final Seeding of Excavated Soil Staging Pile

Old American Zinc Plant Superfund Site Surrounding Properties

St. Clair County, Illinois

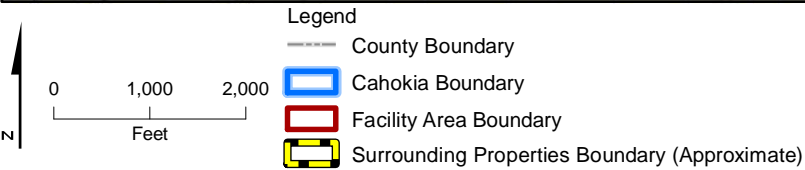
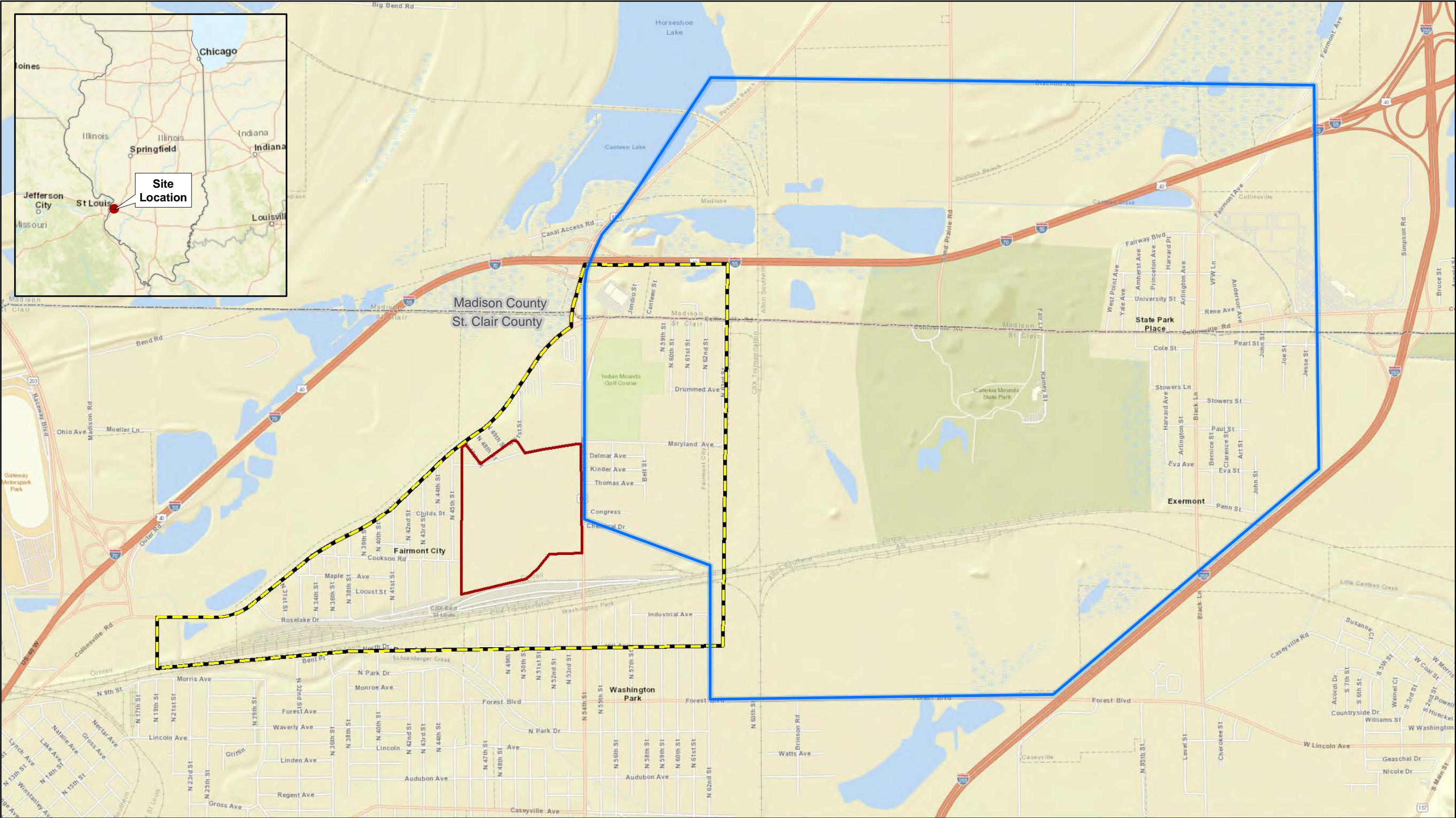
| Item | Qty | Unit | Unit Price | Total (Rounded) | Notes |
|---|--------|------|--------------|-----------------|--|
| Pre-construction Activities | 1 | LS | \$ 29,432 | \$ 29,400 | Work Plan, HASP/AHAs, schedule, training, premobilization submittals, performing initial borrow source sampling. Includes costs for submittal reviews and revisions. Pricing based on recent project experience. |
| Correlation Study | 1 | LS | \$ 50,000 | \$ 50,000 | Preparation of QAPP/QAPP Amendment, sample collection, and laboratory analysis. Assume 20 samples. To be performed concurrent with preconstruction activities. |
| Coordination Meeting | 1 | LS | \$ 2,522 | \$ 2,500 | Coordination meeting with city, county, and township representatives. |
| Mobilization | 1 | LS | \$ 86,746 | \$ 86,700 | Mobilize and demobilize equipment and materials to site and prepare staging areas. Document existing condition of haul routes with photos and videos. Pricing based on recent project experience. |
| Setup Facilities | 1 | LS | \$ 48,982 | \$ 49,000 | Setup construction trailer, temporary SESC measures, facilities, stockpile areas, parking areas. |
| Community Relations, three (3) mtgs | 1 | LS | \$ 5,728 | \$ 5,700 | Assume three (3) public meetings throughout the course of construction. Each meeting included labor for preparation and attendance. |
| Air Monitoring | 155 | DY | \$ 385 | \$ 59,700 | Labor, equipment, and materials to conduct air monitoring at residential properties and the FA, throughout the project construction. |
| Initial Preconstruction Meeting | 68 | EA | \$ 566 | \$ 38,500 | Document existing property condition with digital photos and videos. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory. Assumes one meeting with Village to go over all alleyways. |
| Second Preconstruction Meeting | 67 | EA | \$ 293 | \$ 19,600 | Document Property Owner approval of the work to be performed. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory. |
| Clearing and Site Preparation at Properties | 67 | EA | \$ 934 | \$ 62,600 | Clear & Grub grasses and root systems, removal of trash, debris, shrubs, swing sets, benches, and other obstructions. |
| Transport Yard Waste to FA - Mixed | 34 | TN | \$ 37 | \$ 1,200 | Transport of trees, shrubs, miscellaneous wood, metal, and debris. Assume 0.5 ton per property. |
| Tree Removal (2"-4" dia) | 3 | EA | \$ 796 | \$ 2,400 | Based on actual costs incurred on a similar project (USS Lead). |
| Excavation | 12,130 | BCY | \$ 61 | \$ 739,900 | Excavation with a small excavator and some by hand. Signage and protective measures for pedestrian traffic on sidewalks or streets, as required. SESC measures as required. Assumes overexcavation of some properties based on COC concentrations. |
| Demarcation Fabric | 17,100 | SF | \$ 1 | \$ 17,100 | High visibility fencing for excavations completed to 30 inches, and XRF screening results are above screening criteria. Estimated based on COC concentrations at maximum sample depth. |
| Transport Excavated Material to FA | 16,980 | TN | \$ 5 | \$ 84,900 | Transportation of soil to the Facility Area. Conversion from BCY to TN based on what is being seen on other similar projects in the region. |
| Stabilize Stockpile | 1 | LS | \$ 92,452 | \$ 92,500 | Assumes 2.5 acre footprint, covered with 4-in of topsoil and a single seeding of completed stockpile. |
| Backfill - General | 5,760 | BCY | \$ 48 | \$ 276,500 | Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of general backfill. Includes additional fill material for overexcavation. |
| Backfill - Topsoil | 5,580 | BCY | \$ 61 | \$ 340,400 | Includes assistance with QA/QC sampling, purchase/delivery, and installation of topsoil. |
| Backfill - Select Topsoil | 43 | BCY | \$ 72 | \$ 3,100 | Includes assistance with QA/QC sampling, purchase/delivery, and installation of select topsoil. |
| Backfill - CA-1 Aggregate | 194 | TN | \$ 49 | \$ 9,500 | Placed before the CA-6 material in alleyways where excavation depth exceeds 18 inches. Assumed 6-inch depth. |
| Backfill - CA-6 Aggregate | 1,340 | TN | \$ 49 | \$ 65,700 | Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of gravel (IDOT CA-6). |
| Street Sweeping | 7 | MO | \$ 5,623 | \$ 39,400 | Performed from start of excavation through topsoil placement. |
| Landscape - Supply/Plant Perenials | 100 | EA | \$ 42 | \$ 4,200 | HCSS Estimate |
| Landscape - Supply/Plant Shrubs | 82 | EA | \$ 139 | \$ 11,400 | HCSS Estimate |
| Landscape - Supply/Plant Trees | 3 | EA | \$ 527 | \$ 1,600 | Based on RSMeans |
| Restoration - Seeding Application and Maintenance | 312 | MSF | \$ 765 | \$ 238,700 | Includes 6-week maintenance/watering period for each property (for up to a total of 10 watering events per property). |
| Landscape Warranty/Replacement | 1 | LS | \$ 30,703 | \$ 30,700 | Allowance for reseeding and trees for replacement. Assume 12% of total landscaping/seed placement costs. |
| Restoration - Wood Mulch | 1,200 | SF | \$ 1 | \$ 1,200 | Placement in garden areas, 3-inches thick. |
| Restoration - Rock Mulch | 10 | CY | \$ 138 | \$ 1,400 | Placement in garden areas with existing rock mulch, 3-inches thick. |
| Restoration - Weed Block | 2,200 | SF | \$ 0.29 | \$ 600 | Place beneath wood mulch and rock mulch. |
| Restoration - Drain Tile Repair | 5 | EA | \$ 3,500 | \$ 17,500 | Allowance |
| Restoration - Concrete Repair | 150 | CY | \$ 559 | \$ 83,900 | Assume 10 feet of repair at each property where access will occur from/over sidewalk (assumed 30 properties). Assume 6-inches thick and 4.500 PSI |
| Restoration - Asphalt | 2,500 | SF | \$ 6 | \$ 15,000 | Restoration of any damaged asphalt during backfill and restoration activities. Assume 3-inches thick. IDOT A-3 surface material. |
| Fence Replacement - Chain Link | 170 | LF | \$ 34 | \$ 5,800 | Assume 2 8-ft panels replaced at 15% of properties |
| Post Construction Meeting | 67 | EA | \$ 276 | \$ 18,500 | Document issues identified during work, outstanding punch list items, and substantial completion at the property. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory. Assumes one meeting with Village to go over all alleyways. |
| Analytical Sampling | 12 | EA | \$ 1,223 | \$ 14,700 | Initial and QA/QC samples for general backfill, topsoil, etc. |
| XRF Rental | 7 | MO | \$ 3,000 | \$ 21,000 | XRF rental for duration of project. |
| Demobilization | 1 | LS | \$ 34,804 | \$ 34,800 | |
| Payment and Performance Bond | 2.50% | of | \$ 2,577,300 | \$ 64,400 | |
| Contingency | 15% | of | \$ 2,577,300 | \$ 386,600 | |
| Escalation - Project to be executed in 2019 | 3% | of | \$ 3,028,300 | \$ 90,800 | |
| SUBTOTAL CONSTRUCTION | | | | \$ 3,119,100 | |
| Optional Items | | | | | |
| Utility Locates | TBD | EA | \$ 260 | NA | Unit pricing for utility locating, if determined necessary by owner's representative. |
| Surveys | TBD | EA | \$ 409 | NA | Unit pricing for surveying, if determined necessary by owner's representative. Assumes a minimum 10 by-10 foot grid and then use of a level and rod to measure elevations. |
| Excavated Soil Staging Pile Management | 1 | LS | \$ 122,400 | NA | Labor, equipment and materials to shape/compact stockpile and removal/placement of poly sheeting on working face, as determined necessary by owner's representative. |
| Project Management/Construction Management | | | | | |
| Administration/Contractor Oversight | 25% | of | \$ 3,119,100 | \$ 779,800 | CM, H&S, and CQM onsite, PM time |
| Owner's Representative Markup | 5% | of | \$ 3,119,100 | \$ 156,000 | per contract rates |
| Total Capital Cost: | | | | \$ 4,054,900 | |
| CLASS 2 RANGE: | | | 20% | \$ 4,865,900 | |
| | | | -15% | \$ 3,446,700 | |

This construction cost estimate is not an offer for construction and/or project execution. The construction cost estimate for this Design is an Association for the Advancement of Cost Engineering (AACE) Class 2 estimate and is assumed to represent the actual total installed cost. The estimate above is considered control-level cost estimating, suitable for use in project budgeting and planning. This estimate has been prepared with partial design and engineering calculations. The level of accuracy for the class of estimate defines the upper and lower ranges of the cost estimate. It is based upon the level of design detail and uncertainty associate with that level of detail. For a Class 2 estimate, the accuracy range is +20% to -15%. It would appear prudent that internal budget allowances account for the highest cost indicated by this range as well as other site specific allowances. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.

Appendix E

Agency Consultation Documentation

SHPO



Notes:
1. Basemap provided by ArcGIS Online World Street Map.

Figure 1
Site Location Map
Old American Zinc Plant Superfund Site
Fairmont City, Illinois
ch2m

Cultural Resources Literature Review for the Old American Zinc Plant Superfund Site Madison and St. Clair Counties, Illinois

WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



July 2018

ch2m.SM

Executive Summary

On behalf of the U.S. Environmental Protection Agency (EPA), CH2M HILL, Inc. (CH2M), conducted a cultural resources literature review for the Old American Zinc (OAZ) Plant Superfund Site (Project) in Madison and St. Clair Counties, Illinois. The Project, encompassing approximately 503.49 hectares (1,244.14 acres), including the 63-hectare (156-acre) OAZ facility, is situated within the community of Fairmont City, Illinois. While the site is defined as the 503.49-hectare (1,244.14 acre) area of properties surrounding the OAZ facility, select properties, primarily west and southwest of the facility, will be subject to soil sampling and removals to remediate contaminated areas, which are deemed an imminent human health hazard, by EPA.

The project consists of taking soil samples using a 3- to 3.5-inch hand auger, from the top 24 inches of ground surface at select residential properties within the Village of Fairmont City, to test for zinc, arsenic, cadmium, and lead. Residences found to have elevated levels of these metals are in turn proposed to be mitigated by excavating contaminated soil and backfilling the impacted area with clean soil. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. To date, the design and project plan for removal and remediation of contaminated soils has not been completed, although an emergency action is being completed at some properties with elevated concentrations of the metals. These actions are being undertaken by EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 United States Code Section 9601 et seq. (Superfund). As such, this project is subject to review under the National Historic Preservation Act of 1966, as amended, and the regulations (36 *Code of Federal Regulations* Part 800) outlined by the Advisory Council on Historic Preservation. The EPA is the lead federal agency.

CH2M conducted a records search between June 15 and 22, 2018, using the Illinois Historic Preservation Agency Cultural Resources Management Report Archive, the Illinois Archaeology Survey (IAS) Inventory of Archaeological Sites (Illinois Site Geographic Information System), and the Historic Architectural Resource Geographic Information System (HARGIS) to identify previously recorded cultural resources and/or investigations in or near the Project area. The literature review revealed that one National Historic Landmark (NHL) and National Register of Historic Places (NRHP)-listed resource, one United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site, 59 IAS-listed archaeological sites, six resources that have been determined eligible for listing in the NRHP, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project. Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project. Of the cultural resources inventoried within the study area, one NHL and NRHP-listed resource, six IAS-listed archaeological sites, three IAS-listed mound sites, one HARGIS-list resource, and 16 of the previous cultural resources investigations are located within the project area.

The most significant of these resources within the project area is the Cahokia Mounds site, which was listed as an NHL in 1964, and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most prominent archaeological sites in North America. Two site numbers have been assigned to Cahokia Mounds (11MS2 and 11S34), and each of the sites has been further divided into 24 “site divisions.” Portions of eight of the 24 Cahokia Mound site divisions fall within the project area. Cahokia is also a UNESCO World Heritage Site. The parcels currently included in the remediation plan are located outside of the current UNESCO World Heritage Site boundaries. The remaining archaeological

resources within the project area are composed of Late Woodland through Mississippian period habitation sites, resulting from the region's heavy utilization during these periods.

Numerous and sometimes complex prehistoric and historic sites have been identified within and near the project area. Review of previously identified archaeological sites and historic mapping indicate a high probability of both prehistoric and historic archaeological deposits to be located in the Project's vicinity.

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Acronyms and Abbreviations

| | |
|--------|---|
| A.D. | Anno Domini |
| CH2M | CH2M HILL, Inc. |
| CRM | Cultural Resources Management |
| EPA | U.S. Environmental Protection Agency |
| EWP | East West Project |
| GIS | Geographic Information System |
| HARGIS | Historic Architectural Resource Geographic Information System |
| HSRPA | Human Skeletal Remains Protection Act |
| IAS | Illinois Archaeology Survey |
| ID | identification |
| IHPA | Illinois Historic Preservation Agency |
| NHL | National Historic Landmark |
| NRHP | National Register of Historic Places |
| OAZ | Old American Zinc |
| UNESCO | United Nations Educational, Scientific, and Cultural Organization |

Introduction

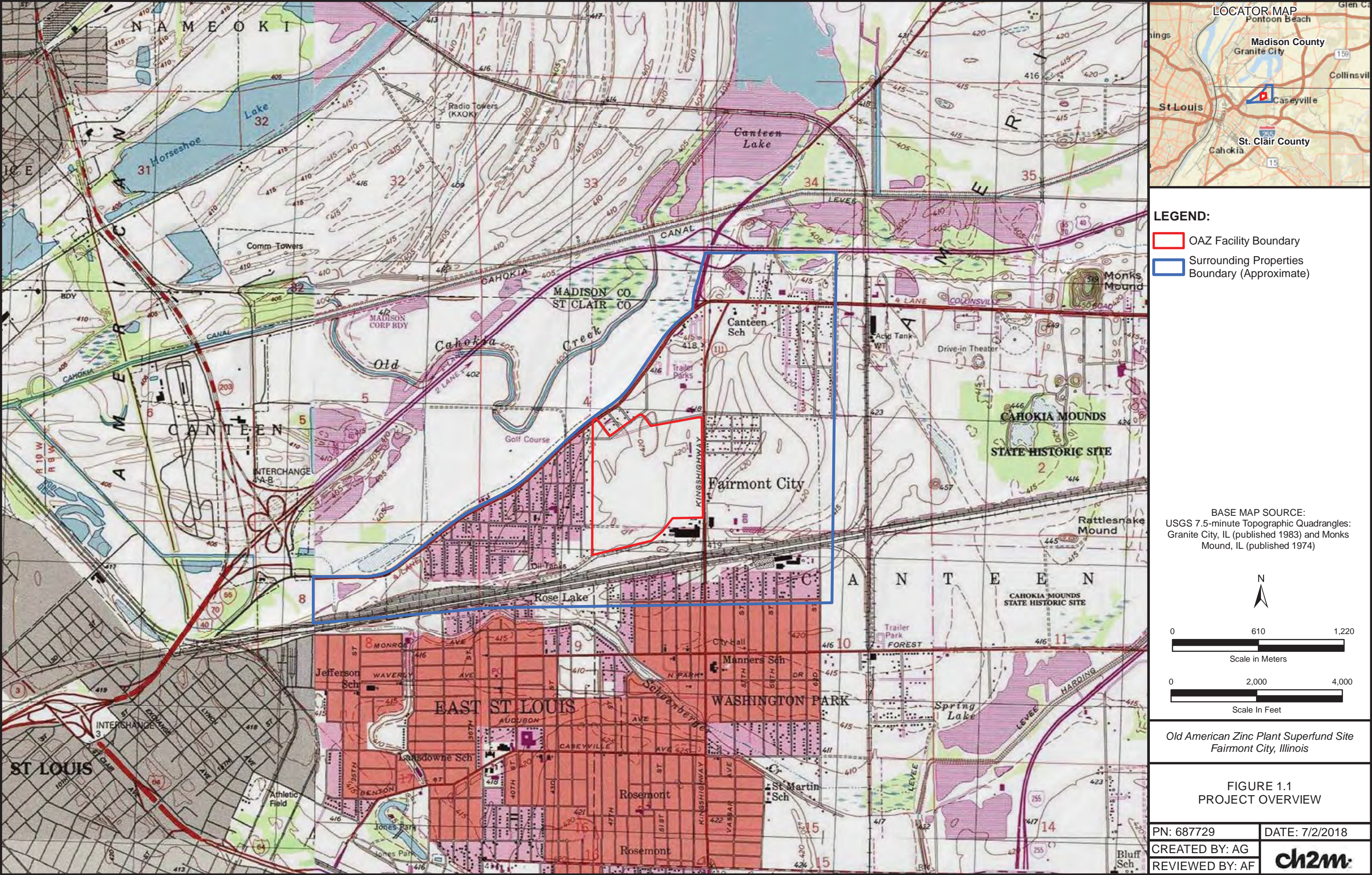
On behalf of the U.S. Environmental Protection Agency (EPA), CH2M HILL, Inc. (CH2M) conducted a cultural resources literature review for the proposed Old American Zinc (OAZ) Superfund Project (Project) in Madison and St. Clair Counties, Illinois. The project encompasses approximately 503.49 hectares (1,244.14 acres), including the 63-hectare (156-acre) OAZ facility, within the Village of Fairmont City, Illinois (Figures 1.1 and 1.2). While the project area is defined as the 503.49-hectare (1,244.14 acre) area of properties surrounding the OAZ facility, select properties will be subject to soil sampling and removals to remediate contaminated areas, which are deemed an imminent human health hazard, by EPA.

The project consists of taking soil samples using a 3- to 3.5-inch hand auger, from the top 24 inches of ground surface at select residential properties within the Village of Fairmont City, to test for zinc, arsenic, cadmium, and lead. Residences found to have elevated levels of these metals are in turn proposed to be mitigated by excavating contaminated soil and backfilling the impacted area with clean soil. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. To date, the design and project plan for removal and remediation of contaminated soils has not been completed, although an emergency action is being completed at some properties with elevated concentrations of the metals. These actions are being undertaken by EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 United States Code. Section 9601 et seq. (Superfund). As such, this project is subject to review under the National Historic Preservation Act of 1966, as amended, and the regulations (36 *Code of Federal Regulations* Part 800) outlined by the Advisory Council on Historic Preservation. EPA is also the lead federal agency.

CH2M conducted a records search between June 15 and 22, 2018, using the Illinois Historic Preservation Agency Cultural Resources Management (CRM) Report Archive, the Illinois Archaeology Survey (IAS) Inventory of Archaeological Sites (Illinois Site Geographic Information System [GIS]), and the Historic Architectural Resource Geographic Information System (HARGIS) to identify previously recorded cultural resources and/or investigations in or near the project area. CH2M gathered information about previously conducted cultural resource investigations and inventoried cultural resources around the project area.

Key personnel committed to the project include Principal Investigator Amy C. Favret and Field Directors Kyle Spurgeon and April Greenberg. Ms. Favret served as principal investigator and report co-author. Mr. Spurgeon conducted the records search, served as report co-author. Ms. Greenberg contributed to report graphics.

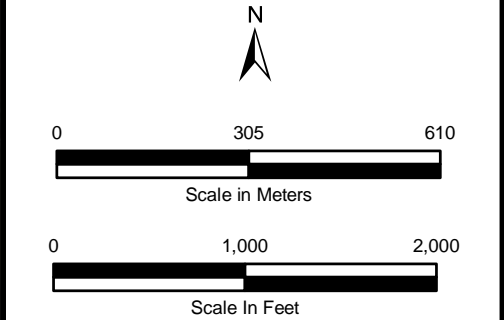
Section 2 of this report presents the results of the literature review. Section 3 discusses the results and presents the conclusions and recommendations. Section 4 contains the references cited in this report.





- LEGEND:**
- Facility Area Boundary
 - Surrounding Properties Boundary (Approximate)
 - County or City Boundary

BASE MAP SOURCE:
ESRI World Imagery Layer, 2015



Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 1.2
PROJECT OVERVIEW ON
AN AERIAL MAP

| | |
|-----------------|----------------|
| PN: 687729 | DATE: 8/7/2018 |
| CREATED BY: AG | ch2m |
| REVIEWED BY: AF | |

Literature Review

CH2M conducted background research using the Illinois Historic Preservation Agency CRM Report Archive, Illinois Site GIS, and HARGIS to identify previously recorded cultural resources and/or investigations in or near the project Area of Potential Effects (APE). These databases were consulted between June 15 and 22, 2018. A 1.6-kilometer (one-mile) buffer (study area) was used to identify previously recorded cultural resources and to provide information on the probability of identifying cultural resources within the APE. For the literature review, the following resources were consulted:

- National Historic Landmarks List (NHL)
- National Register of Historic Places (NRHP)
- UNESCO World Heritage Site List
- IAS Inventory of Archaeological Sites
- IAS Inventory of Mound Sites
- Illinois Historic and Architectural Resources (HARGIS)
- Illinois State Museum (ISM) Cemeteries
- IAS Cemeteries
- Previous CRM reports
- County historic maps

Based a review of the records available through the online mapping databases, one NHL and NRHP-listed resource, one UNESCO World Heritage Site, 59 IAS-listed archaeological sites, six resources that have been determined eligible for listing in the NRHP, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project (Figures 2.1 through 2.5). Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project. Of the cultural resources inventoried within the study area, one NHL and NRHP-listed resource, six IAS-listed archaeological sites, three IAS-listed mound sites, one HARGIS-list resource, and 16 of the previous cultural resources investigations are located within the project area.

2.1 National Historic Landmarks and National Register of Historic Places

One NRHP-listed and NHL-listed project property is documented within 1.6 kilometers (one mile) of the project (Figure 2.1). The Cahokia Mounds site was listed as an NHL in 1964 and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most significant and intensely studied archaeological sites in North America. Spanning more than 4,000 acres at the height of its occupation, the site is the largest expression of a Mississippian period settlement and mound complex (Aten and Bond 1974). The area was initially occupied during the Late Woodland period (Anno Domini [A.D.] 600-800) as observed from the Patrick Phase material recovered from the site. Near A.D. 900, the region's inhabitants began to develop into the Mississippian culture, and through A.D. 1050 (Fairmont Phase), mound construction, elaborate burials, social stratification, and the first Cahokia city plans were developed. Between A.D. 1050-1150 (Stirling Phase), the city began to grow, and the first stockade was constructed (Aten and Bond 1974). During the Morehead Phase (A.D. 1150-1250), Cahokia reached the height of its complexity and regional influence. Maximum population size during this period have varied widely from 40,000 to near 20,000 (Aten and Bond 1974; Pauketat and Lopinot 2000; Pauketat 2004). Between A.D. 1250-1500 (Sand Prairie Phase), the site began a gradual decline (Aten and Bond 1974). Oneota inhabitants established smaller villages near the site after A.D. 1400, and by

A.D. 1600, Native Americans associated with the Illinois confederacy occupied the area. French missionaries also briefly occupied the site in the early 1700s, and in the early 1800s, Trappist monks resided near what is now known as Monks Mound (Aten and Bond 1974).

Key features of the site include at least 120 earthen mounds of varying size and purpose. Platform mounds served as bases for ceremonial or residential structures, while others contained burials of high-ranking members of society, and perhaps their retainers or human sacrificial victims (Aten and Bond 1974). The largest of these mounds, Monks Mound, is the largest prehistoric earthen mound in North America. Other prominent aspects of the site include a rectangular town plan aligned to north/south and east/west axes, a wooden palisade with circular and rectangular bastions that surrounded the inner precinct of the site, a woodhenge area where multiple henges were constructed and operated as solar calendars, and groupings of mounds and houses that formed subcommunity areas (Aten and Bond 1974).

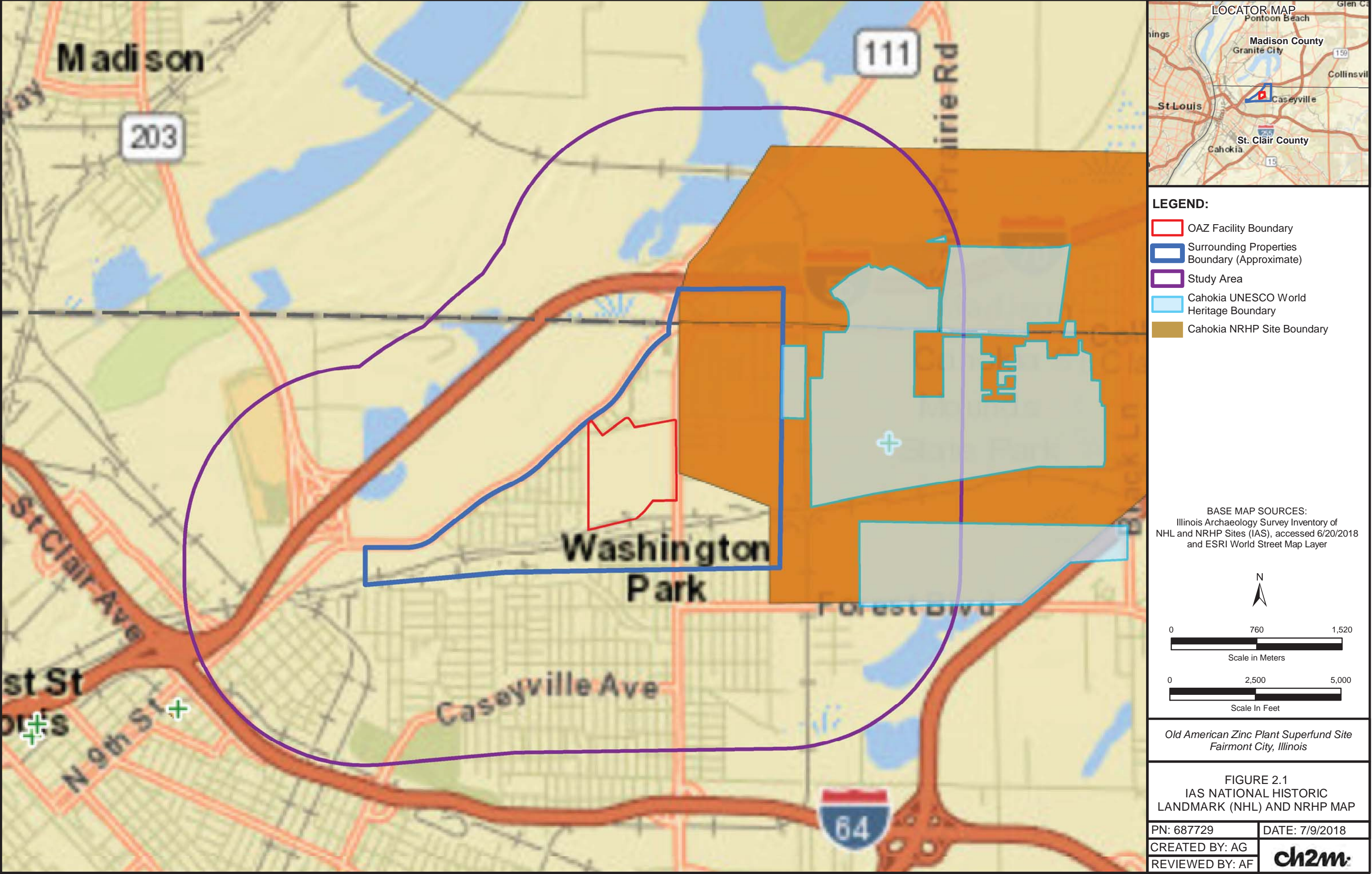
A total of 173.45 hectares (428.60 acres) of Cahokia Mounds, as delineated for the NHL and NRHP, fall within the project footprint (Figure 2.1). These include site divisions 11S34/5, 11S34/6, 11S34/7, 11S34/8, 11S34/9, 11MS2/1, 11MS2/4, and 11MS2/6.

2.2 UNESCO World Heritage Site List

The Cahokia Mounds site is one of only 23 UNESCO World Heritage Sites within the U.S. Of the 23 UNESCO World Heritage Sites within the U.S., Cahokia Mounds is one of 10 that are designated as cultural sites. Inscribed as a World Heritage Site in 1982, the UNESCO designation recognizes the site's significance as the largest pre-Columbian settlement north of Mexico (UNESCO 2013). The site is also noted as the preeminent example of the Mississippian cultural tradition, which at its height, stretched throughout Mississippi River Valley and into the southeastern U.S. The UNESCO listing acknowledges the site's importance as representative of a preurban society in which a political and economic hierarchy facilitated organized labor, communal agriculture, and trade as reflected in the site's layout and design (UNESCO 2013). The current World Heritage Site boundary incorporates a total of 540 hectares (1,460 acres).

The 2013 UNESCO periodic report notes that the site has no protective buffer in place currently, nor was one implemented at the time of inscription (UNESCO 2013). However, the report also remarks that the site is owned and operated by the State of Illinois as a State Historic Site (via the Illinois Historic Preservation Agency[IHPA]) and protected by state law under the Archaeological and Paleontological Resources Protection Act (20 Illinois Compiled Statutes 3435, 1990), Human Skeletal Remains Protection Act (20 Illinois Compiled Statutes 3440, 1989), and Illinois State Agency Historic Resources Protection Act (Illinois Compiled Statutes 3420, 1990 as amended). Further, the report finds that the site is afforded the highest available level of U.S. federal cultural resources protection as an NHL site.

Review of the current project area indicates that the eastern boundary runs north to south generally along North 63rd Street. As such, the project area is located adjacent to, but outside and to the west of, the westernmost portion of the Cahokia Mounds World Heritage Site area (Figure 2.1).



2.3 Illinois Inventory of Archaeology Sites

In addition to Cahokia Mounds (11MS2 and 11S34), CH2M identified 57 archaeological sites within 1.6 kilometers (one mile) of the project (Table 2.1; Figure 2.2). Of the IAS-listed sites, including Cahokia Mounds, 30 are prehistoric, nine are historic, and 20 are multicomponent, containing both prehistoric and historic cultural materials. Fifty of the IAS-listed sites contain a prehistoric component, including 34 that have an unassigned temporal affiliation. Although many of the prehistoric sites are affiliated with more than one temporal association, the period predominately represented is the Mississippian (n=28). The remaining sites with temporal associations range from the Archaic through the Late Woodland periods. Prehistoric sites with no temporal association are largely lithic or ceramic scatters with no dialogistic material recovered. Of the 29 sites with a historic component, the majority are associated with former residential areas or farmsteads and generally date to the mid-19th century to the post-war period.

Of all sites within 1.6 kilometers (one mile) of the project, two are NRHP-listed (11S34 and 11MS2) and four have been determined NRHP eligible (11S706, 11S1445, 11MS1316, and 11MS1548). An additional seven sites are recorded with a status of “HSRPA Burial Law” (11S82, 11S706, 11S1525, 11S2040, 11MS1375, 11MS1385, and 11MS1548). This indicates that these sites may contain or have been confirmed to contain human burials and are subject to the Illinois Human Skeletal Remains Protection Act (HSRPA). Of these seven sites, 11S82 is located within the project footprint. Further, six sites are recorded with a status of having been recommended for Phase II archaeological testing or have already been submitted to Phase II testing. All remaining sites are recorded without a compliance status or are listed as having not been formally reviewed.

Six sites identified within 1.6 kilometers (one mile) of the project are located within or partially within the project footprint. The most significant of these is the NRHP-listed and NHL Cahokia Mounds site, which is divided between archaeological site number 11S34 for the portions in St. Clair County, and 11MS2 in Madison County. Both of these sites have been divided into divisions or tracts to better manage the size and complexity of the Cahokia Mounds resources. The site is divided into 12 sections in each county: 11S34/1 through 11S34/12 in St. Clair County, and 11MS2/1 through 11MS2/12 in Madison County. Within St. Clair County, sections 11S34/5, 11S34/6, 11S34/7, 11S34/8, and 11S34/9 are within the project footprint. In Madison County, sections 11MS2/1, 11MS2/4, and 11MS2/6 are located within the project footprint.

Four additional sites are located within or partially within the project footprint. Site 11S82 (Fairmont City Site) is recorded as 3 separate mound locations and one occupation area dating to the Late Woodland through Mississippian Period. Mound 1 is located between 48th and 49th Streets off of Collinsville Road, Mound 2 at 3501 Cookson Road, and Mound 3 at the southwest corner of 31st and Collinsville Road. Site 11S1142 (Ananab Tilps Site) was recorded within the upper portion of a ditch west of Illinois Route 111 and is composed of a low-density flake scatter of unknown prehistoric association. A very small portion of site 11S1184 (Chasedawn Site) is also located within the project area, northeast of North 62nd Street. This site is recorded as a Late Woodland period habitation site consisting of eight chert flakes, one biface fragment, and 2 grog/grit tempered ceramic fragments. Lastly, a small portion of site 11S1445 (Emma Frances Site) is partially within the project area along Collinsville Road. Review of IAS files indicates that this site is a Late Woodland to Mississippian period prehistoric habitation site and includes an early industrial to post-war historic component (1871-Post 1946). The site has undergone Phase II archaeological testing and was determined to be NRHP-eligible.

The majority of sites located outside of the project area are prehistoric or historic habitation areas and artifact scatters, most of which have not been formally reviewed for NRHP-eligibility. Perhaps the most noteworthy site outside of the project footprint is the Metro East Mounds site (11S706) located near the I-55/70 and I-64 interchange and the former site of the National Stock Yards. Kruchten and Koldehoff

(2009) have described this site as the second only in size to Cahokia Mounds as a Mississippian mound and town complex. They also state that Cahokia and the Metro East Mounds are linked by a series of mounds, and together the two sites functioned as the focal political and administrative center for the Cahokia polity. Multiple investigations at this site have revealed numerous mound sites and thousands of structure and pit features have been identified in association with the Metro East Mounds. At its closest, the McCarty Tract of the Metro East Mounds is located approximately 725 feet southwest of the Project area.

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

| Site Number/Name | Temporal Affiliation | Archaeological Site Type | Compliance Status |
|------------------------------------|--|--|---|
| 11S34/Cahokia Mounds | Prehistoric – Archaic, Middle Archaic, Late Woodland, Mississippian; Historic – 1673-Post 1946 | Habitation/Multiple Mound Locations | NRHP-Listed; NHL |
| 11S44 | Prehistoric - Mississippian | Camp/Habitation | Not Recorded |
| 11S45 | Prehistoric – Possible Archaic; Woodland; Mississippian | Camp/Village | Not Recorded |
| 11S82/Fairmont City Site | Prehistoric – Late Woodland; Mississippian | 3 Mound Locations/Occupation | HSRPA Burial Law |
| 11S316/Axis Site | Prehistoric – Archaic; Historic – Early 20 th Century | Camps/Habitation | Recommended for Phase II |
| 11S623/St. Martin School Site | Prehistoric – Late Woodland; Mississippian | Series of Camps | Not Reviewed |
| 11S706/Metro East Mounds | Prehistoric – Late Woodland; Mississippian | Habitation/Multiple Mound Locations | Determined Eligible, HSRPA Burial Law |
| 11S1142/Ananab Tilps Site | Prehistoric – Undetermined | Habitation | Not Reviewed |
| 11S1184/Chasedawn | Prehistoric – Late Woodland | Habitation | Not Reviewed |
| 11S1185/Dawnchase | Prehistoric – Mississippian | Lithic Scatter | Not Reviewed |
| 11S1186/Laura D. | Prehistoric – Undetermined | Lithic Scatter | Not Reviewed |
| 11S1187/D Site | Prehistoric – Undetermined | Lithic Scatter | Not Reviewed |
| 11S1188/62 nd Street | Prehistoric – Undetermined | Isolated Find | Determined Not Eligible |
| 11S1206 | Prehistoric – Late Woodland; Mississippian | Unspecified | Phase II, Determined Not Eligible |
| 11S1445/Emma Frances Site | Prehistoric – Late Woodland, Mississippian; Historic – 1871-Post 1946 | Habitation | Phase II Completed, Determined Eligible |
| 11S1525/Canaday School | Historic – 1781-1900 | Cemetery/Human Remains and Coffin Components | HSRPA Burial law |
| 11S1790/Old 8 th Street | Historic – 1781-1900 | Habitation | Not Reviewed |

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

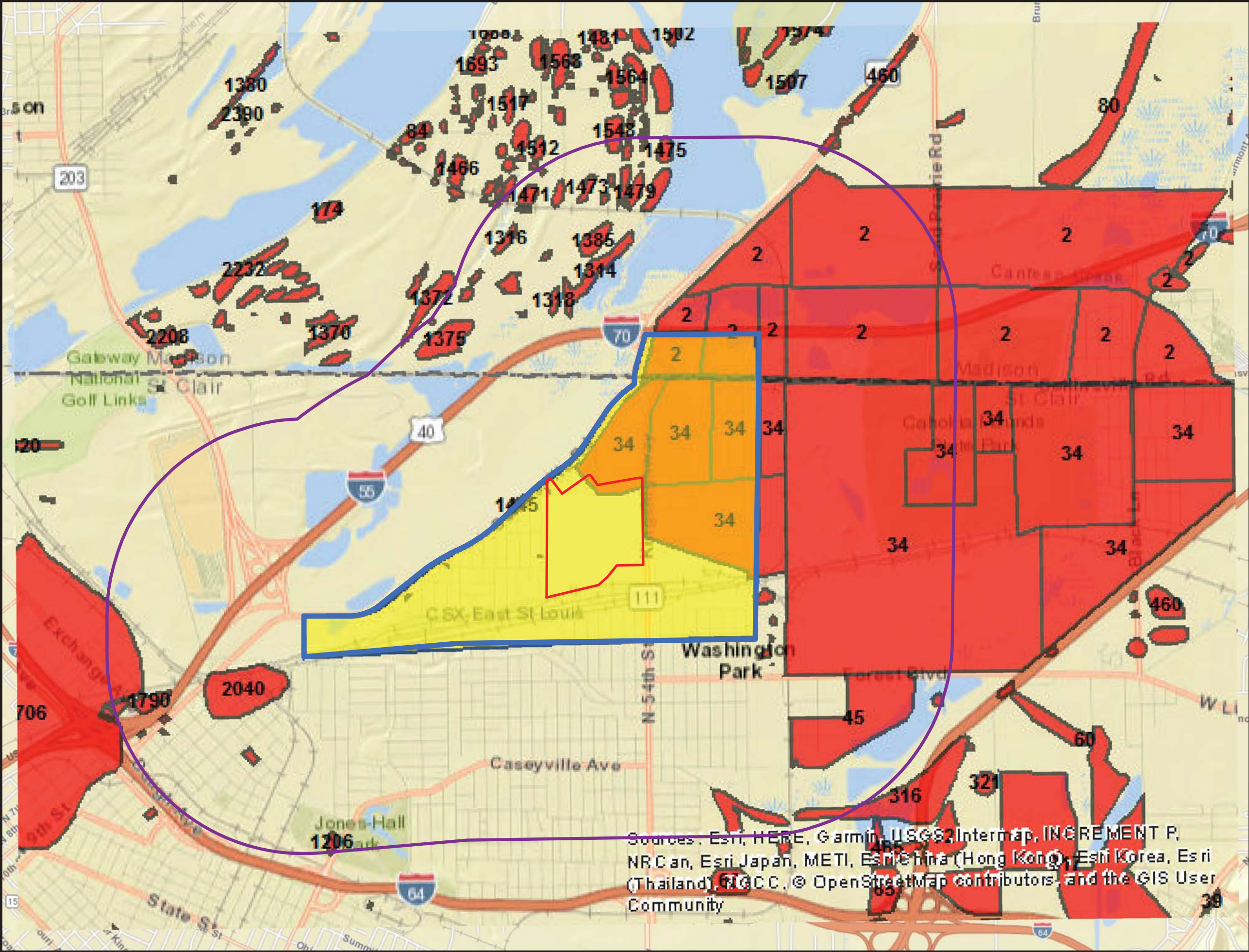
| Site Number/Name | Temporal Affiliation | Archaeological Site Type | Compliance Status |
|-------------------------------|--|--|---|
| 11S1791/Ninth and Exchange | Historic – 1841-1870 | Habitation | Not Reviewed |
| 11S1792/Mary B. Young | Prehistoric – Late Archaic; Historic – 1871-Post 1946 | Habitation | Not Reviewed |
| 11S1793/Sexton's Subdivision | Historic – 1901-Post 1946 | Habitation | Not Reviewed |
| 11S1796/Henry Eggert | Historic – 1871-Post 1946 | Habitation/Neighborhood Associated with Henry Eggert | Not Reviewed |
| 11S1811/Block 17 | Historic – 1901-Post 1946 | Habitation | Not Recorded |
| 11S2040 | Unspecified (Late Woodland; Mississippian) | McCarty Tract Mound Group (Tract 7); *Previously included with site 11S706 | HSRPA Burial Law |
| 11MS2/Cahokia Mounds | Prehistoric –Late Woodland, Mississippian; Historic – Generic | Habitation/Multiple Mound Locations | NRHP-Listed; NHL |
| 11MS462/Joseph Niehaus Site | Prehistoric –Mississippian | Habitation | Not Recorded |
| 11MS1314/Canteen Lake #1 Site | Prehistoric –Mississippian; Historic – Unspecified | Habitation | Recommended for Phase II |
| 11MS1315/Canteen Lake #2 Site | Prehistoric –Mississippian | Habitation | Recommended for Phase II |
| 11MS1316/Aufderheide Site | Prehistoric –Mississippian | Unspecified | Phase II Completed, Determined Eligible |
| 11MS1318/Truck Farm Site | Prehistoric –Mississippian | Habitation/Farmstead | Part Not Eligible |
| 11MS1372 | Prehistoric –Late Woodland/Emergent Mississippian | Unspecified | Not Eligible |
| 11MS1373 | Prehistoric –Emergent Mississippian; Historic – 20 th Century | Unspecified | Not Recorded |
| 11MS1374 | Prehistoric –Emergent Mississippian; Historic – 20 th Century | Unspecified | Not Recorded |
| 11MS1375/Nasholin | Prehistoric –Late Woodland, Mississippian; Historic – 1901-Post 1946 | Habitation/Mound | HSRPA Burial Law |
| 11MS1385 | Prehistoric –Mississippian; Historic – Generic | Habitation/Possible Mound | HSRPA Burial Law |
| 11MS1468/Scott Land Site | Prehistoric –Mississippian; Historic – Unspecified | Unspecified | Not Reviewed |
| 11MS1471/Aufderheide Lane | Prehistoric – Unspecified Historic – Unspecified | Unspecified | Recommended for Phase II |

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

| Site Number/Name | Temporal Affiliation | Archaeological Site Type | Compliance Status |
|----------------------------|--|---------------------------------|---------------------------------------|
| 11MS1472/Two Track House | Prehistoric – Unspecified Historic – Unspecified | Unspecified | Not Reviewed |
| 11MS1473/Marsh Boy Site | Prehistoric – Unspecified Historic – Unspecified | Unspecified | Not Reviewed |
| 11MS1474/Discretion Site | Prehistoric - Unspecified | Lithic Scatter | Not Reviewed |
| 11MS1475/John Cowan Site | Prehistoric – Unspecified Historic – Unspecified | Unspecified | Not Reviewed |
| 11MS1476/Diamond Club Site | Prehistoric – Emergent Mississippian; Historic – Unspecified | Unspecified | Not Reviewed |
| 11MS1477/Zurkuhlen Site | Prehistoric - Unspecified | Lithic Scatter | Not Reviewed |
| 11MS1478/GC Crater Minor | Prehistoric - Unspecified | Lithic Scatter | Not Reviewed |
| 11MS1479/GC Crater Site | Prehistoric - Mississippian | Unspecified | Not Reviewed |
| 11MS1514/Sweet Flower Site | Prehistoric - Mississippian | Possible Habitation/Unspecified | Not Reviewed |
| 11MS1548/Morrison Site | Prehistoric – Emergent Mississippian, Early Mississippian | Habitation/Village | Determined Eligible, HSRPA Burial Law |
| 11MS1684 | Prehistoric - Unspecified | Lithic Scatter | Not Reviewed |
| 11MS1685 | Prehistoric - Unspecified | Unspecified | Not Reviewed |
| 11MS1704 | Prehistoric – Late Woodland, Mississippian; Historic – Generic | Habitation | Not Reviewed |
| 11MS1705 | Prehistoric – Late Woodland, Mississippian | Habitation | Not Reviewed |
| 11MS1706 | Historic – 1841-1870 | Unspecified | Not Reviewed |
| 11MS1712 | Prehistoric – Late Woodland, Mississippian; Historic – Generic | Habitation | Not Reviewed |
| 11MS1713 | Prehistoric – Late Woodland, Mississippian | Habitation | Not Reviewed |
| 11MS1715 | Historic – 1841-1870 | Habitation | Not Reviewed |
| 11MS2043 | Prehistoric – Unspecified; Historic – Post 1946 | Lithic Scatter/Historic Scatter | Not Reviewed |
| 11MS2044 | Historic – Generic | Unspecified | Not Reviewed |
| 11MS2045 | Prehistoric – Unspecified; Historic – 1901-Post 1946 | Lithic Scatter/Historic Scatter | Not Reviewed |
| 11MS2046 | Prehistoric – Unspecified | Lithic Scatter | Not Reviewed |

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

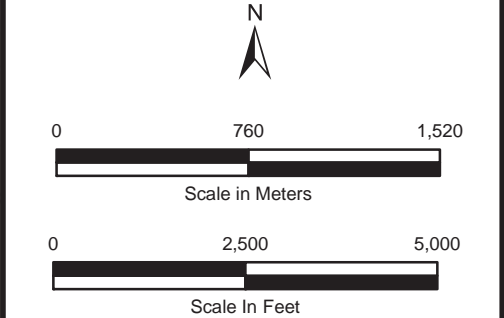
| Site Number/Name | Temporal Affiliation | Archaeological Site Type | Compliance Status |
|-------------------------|---|---------------------------------|--------------------------|
| 11MS2211 | Prehistoric – Late Woodland, Mississippian | Habitation | Not Reviewed |



LEGEND:

- IAS Archaeological Site (number represents site ID)
- OAZ Facility Boundary
- Surrounding Properties Boundary (Approximate)
- Study Area

BASE MAP SOURCES:
Illinois Archaeology Survey Inventory of
Archaeological Sites (IAS), accessed 6/20/2018
and ESRI World Street Map Layer



Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.2
IAS INVENTORY OF
ARCHAEOLOGICAL SITES MAP

| | |
|-----------------|-----------------|
| PN: 687729 | DATE: 7/26/2018 |
| CREATED BY: AG | ch2m |
| REVIEWED BY: AF | |

2.4 Illinois Archaeology Survey - Mound Sites

Twenty-two IAS-listed Mound sites have been documented within 1.6 kilometers (one mile) of the project (see Figures 2.3). All 22 of these records correspond to inventoried IAS archaeology sites with mound components or recorded with a HSRPA Burial Law status (likely to contain burials) as included in Section 2.3 above. Many of these records correspond to areas where numerous mounds have been inventoried, and therefore are not indicative of 22 individual mounds; rather they indicate 22 areas that contain one or more mounds. These sites are 11S34 and 11MS2 (Cahokia Mounds), 11S82 (Fairmont City Site), 11S706 (Metro East Mounds), 11MS1375, 11MS1385, 11MS1548 (Morrison Site), and 11S2040 (McCarty Tract). Of these, Cahokia Mounds (11S34 and 11MS2), and the Fairmont City Site (11S82) are located within portions of the project footprint.

2.5 HARGIS-Listed Resources

There are a total of 26 HARGIS-listed resources within the 1.6-kilometer (one mile) study area (Table 2.2; Figure 2.2). All of the identified HARGIS resources are located within St. Clair County. The Cahokia Mounds site represents the only NRHP-listed HARGIS resource within 1.6 kilometers (one mile) of the project. Two additional resources have been determined NRHP-eligible. These include a bridge (HARGIS #154974) carrying 4th Street over Schoenberger Creek and a bridge (HARGIS #154975) carrying 32nd Street over Schoenberger Creek. The remaining 24 HARGIS-listed resources have not been evaluated for NRHP-eligibility or the status was not recorded. These resources are predominately residential, or church properties located south and west of the project area, near the Rose Lake neighborhood and the I-55/I-70 and I-64 interchange. Only one HARGIS-listed resource is located within the project footprint. Resource 522423 is a single house inventoried as “Rural Survey Property.”

Table 2.2. HARGIS-Listed Resources within the Study Area.

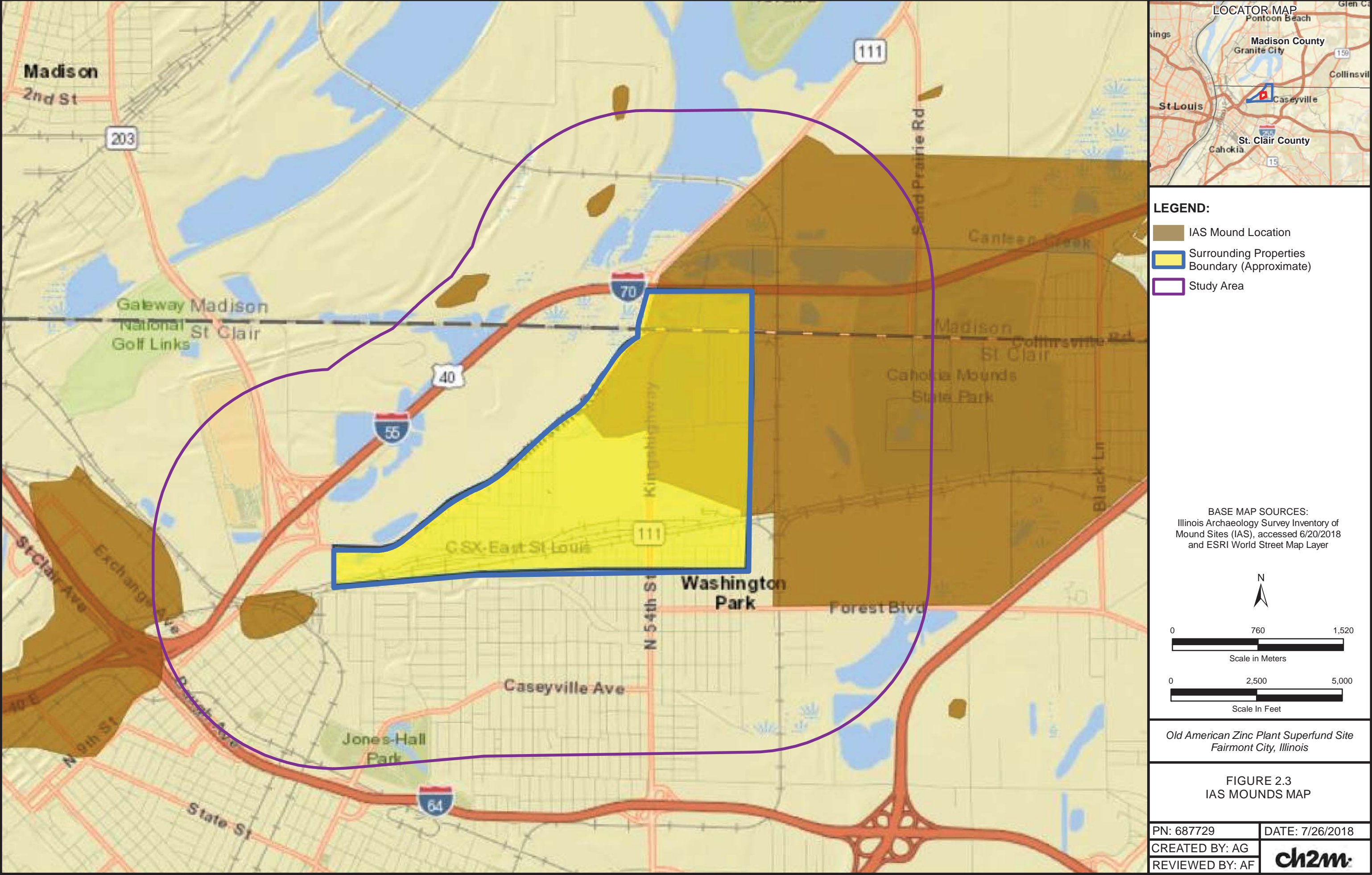
| HARGIS Number | Property Name | NRHP Status | Location |
|---------------|---|--------------------------|---|
| 200451 | Cahokia Mounds | NRHP-Listed | 7850 Collinsville Road, Cahokia Mounds State Park |
| 522423 | Rural Survey Property | Undetermined | 3N 9W S34 |
| 104310 | ---- | Undetermined | 1648 46th |
| 154974 | Bridge carrying 40th St. over Schoenberger Creek – E. St. Louis | Determined NRHP-Eligible | 0.03 mile north of Park Drive |
| 154975 | Bridge carrying 32nd St. over Schoenberger Creek - E. St. Louis | Determined NRHP-Eligible | 0.06 mile north of Park Drive |
| 104222 | ---- | Undetermined | Caseyville |
| 103767 | ---- | Undetermined | Caseyville |
| 104221 | ---- | Undetermined | Caseyville |
| 104309 | ---- | Undetermined | 36th |
| 104308 | ---- | Undetermined | 36th |
| 104228 | ---- | Undetermined | Forest |
| 104236 | ---- | Undetermined | Lincoln |

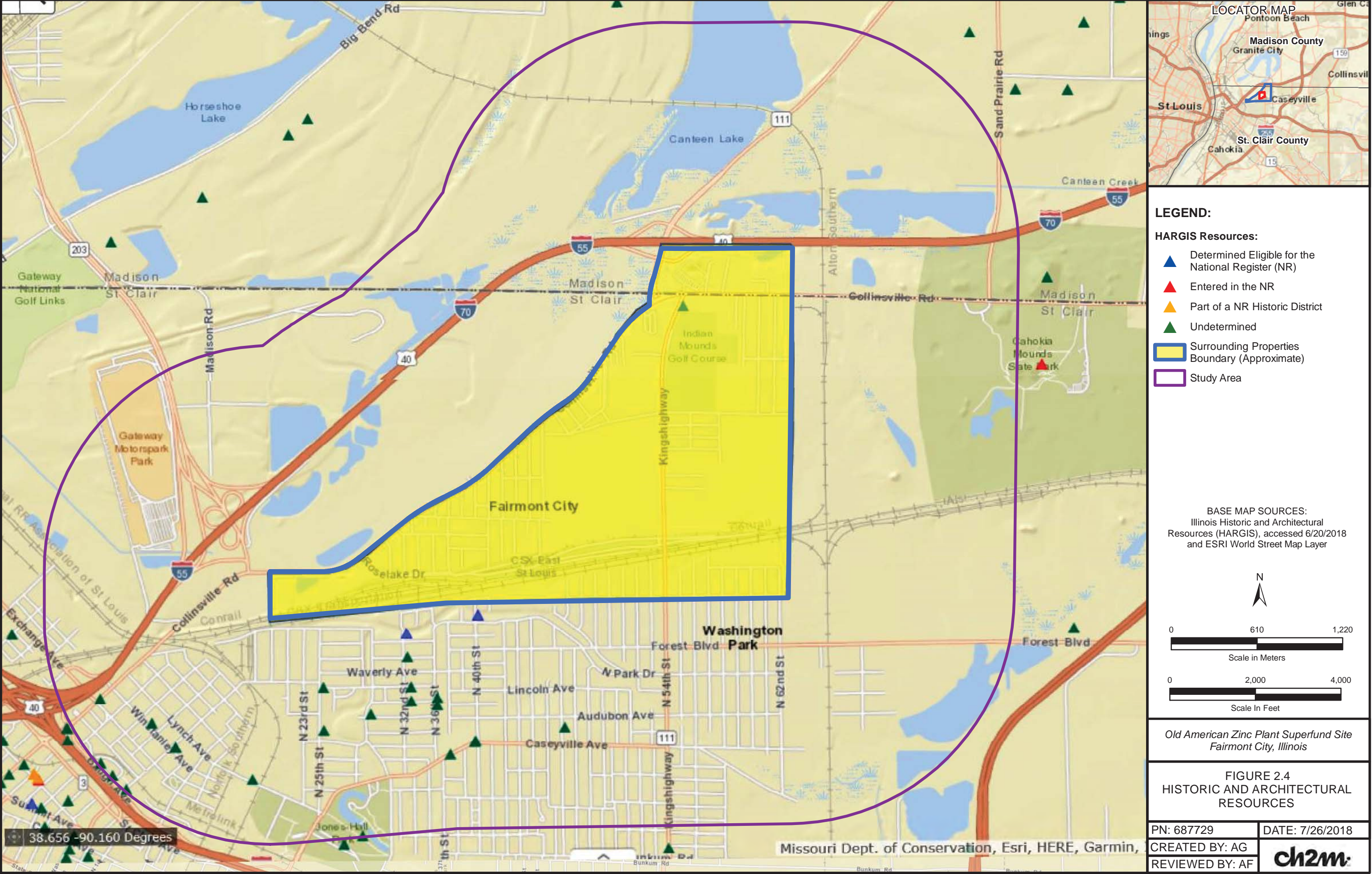
Table 2.2. HARGIS-Listed Resources within the Study Area.

| HARGIS Number | Property Name | NRHP Status | Location |
|---------------|------------------------------|--------------|------------------------------------|
| 104237 | ---- | Undetermined | [REDACTED] Linden |
| 104251 | ---- | Undetermined | [REDACTED] Park |
| 103795 | ---- | Undetermined | [REDACTED] 25th |
| 103796 | ---- | Undetermined | [REDACTED] 25th |
| 103779 | ---- | Undetermined | [REDACTED] Lynch |
| 104282 | ---- | Undetermined | [REDACTED] Winstanley |
| 104281 | ---- | Undetermined | [REDACTED] Winstanley |
| 104292 | ---- | Undetermined | [REDACTED] 9th St. |
| 103529 | ---- | Undetermined | Southeast corner Baugh and 9th |
| 104215 | ---- | Undetermined | [REDACTED] Baugh |
| 163508 | ---- | Undetermined | [REDACTED] St. at I-64 |
| 104216 | ---- | Undetermined | [REDACTED] 5 Baugh |
| 104217 | ---- | Undetermined | [REDACTED] 5 Baugh |
| 103763 | Immaculate Conception Church | Undetermined | Northeast corner of Baugh and 15th |

2.6 Illinois State Museum and Illinois Archaeology Survey Cemetery Files

One previously inventoried cemetery is located within 1.6 kilometers (one mile) of the project (see Figure 2.4). The Canaday School cemetery (IAS cemetery index #163201525), located outside of the project area along Lake Avenue between North 15th and North 18th streets, is also listed in the IAS as archaeological site 11S1525. Site records indicate that in 2002, during demolition of the Canaday School and construction of the new Emerson Park School in East St. Louis, human remains, and coffin components were discovered. Archaeological survey work conducted at the site following the discovery resulted in the excavation of a small portion of the site, which identified a total of 200 historic-era graves (Koldehoff et al. 2002). Historic research at the site indicated that the cemetery was opened in 1817, and later closed in 1889. Tombstones collected during the excavations dated to the 1870s and 1880s, with coffin and hardware being typical of the mid to late nineteenth century. Archival research indicated that the cemetery was moved prior to construction of the Canaday School in 1919; however, archaeological results suggest that tombstones were removed but the human remains were not (Koldehoff et al. 2002). Osteological investigations displayed a wide range of ethnicities among the individuals, some of whom has indications of nutritional distress and poor dental hygiene. Koldehoff et al. (2002) state that the cemetery was largely intact and may contain as many as 4,000 burials. Additionally, two prehistoric pit features and 14 artifacts were found in association with the site, indicating that the location was also utilized during the Early Woodland period (Koldehoff et al. 2002).





2.7 Cultural Resources Management Investigations

Sixty previous cultural resources investigations and two previous history/architecture surveys have been conducted within 1.6 kilometers (one mile) of the project (Table 2.3; Figure 2.5). Of the 60 previous cultural resources investigations within 1.6 kilometers (one mile) of the project, 16 surveys overlap portions of the project footprint. Section 2.7.1 summarizes the previous cultural resource investigations that overlap the project area. A total of 146.09 hectares (361 acres) have been previously surveyed within the project area.

The previous surveys conducted within the study area were primarily for transportation, water line or utility installation, natural resource and wetland reclamation projects, and academic investigations associated with Cahokia Mounds or East Metro Mounds sites. Five previous survey areas identified have temporary identification numbers that produced no results in the CRM report database for review. These include survey numbers 90002, 90706, 91791, 92043, and 96012. Of these, survey ID 90002 is located within the project footprint and discussed in further detail in Section 2.7.1. Survey numbers 90706, 91791, and 96012 are located in proximity to the East Metro Mound site and may be related to investigations into resources associated with this site. Survey number 92043 is located adjacent to survey 3600, which was a 1991 Phase I survey of a Borrow Pit location north of I-55/I-70 (De Mott 1991). Further, multiple previous survey areas are labeled as 99999, indicating that surveys that were mapped prior to the document database, and therefore do not correspond to available report records in the CRM report database. Many of these locations appear to align with transportation corridors, and therefore may be associated with railroad and roadway development projects.

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

| Report Number | Author(s) | Year | Title |
|---------------|--------------------|------|--|
| 234 | Dorwin et al. | 1981 | An Archaeological Reconnaissance of Two Alternative Common Trailer or Flat Car Yard Locations in the East St. Louis Marge Project Area |
| 361 | Unsicker and Lange | 1981 | Report of Archaeological Investigations of the Area to be Affected by the Proposed Rail Connection Between the Baltimore and Ohio and the Louisville and Nashville Railroads in East St. Louis, Illinois |
| 584 | Koldehoff et al. | 1983 | A Cultural Resource Survey of Ten Proposed Dry Detention Basins in the Harding Ditch Area of St. Clair County, Illinois |
| 848 | Norris | 1975 | Horseshoe Lake State Park Archaeological Survey |
| 964 | Williams et al. | 1982 | Gateway to the Past: Cultural Resources Investigations in East St. Louis |
| 1042 | Iseminger | 1980 | A Summary of The Surface Collection of The Mound 75 (Gas Station) Tract at Cahokia Mounds State Historic Site, St. Clair County, Illinois |
| 2493 | Gums | 1988 | MRTC Alton Line |
| 3199 | Simon | 1990 | FAP 582 (IL 111) Bridge Over Horseshoe Lake Channel Section No. 6BR Job No. P98-015-84 |
| 3600 | De Mott | 1991 | Phase I Archaeological Survey of a Borrow Pit Location, Horseshoe Lake Area, Madison County, Illinois |
| 4017 | Lopinot et al. | 1989 | Archaeological Investigations of the Proposed Sanitary Sewer Collection System, Eastern Portion of Village of Fairmont, St. Clair and Madison Counties, Illinois |
| 5169 | Holley et al. | 1992 | Archaeological Investigations at the Rouch Mound Group, Cahokia Mounds State Historic Site |

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

| Report Number | Author(s) | Year | Title |
|---------------|---------------------|------|---|
| 6070 | Markman and Mueller | 1994 | Cahokia Creek Camping and Recreation Development |
| 7131 | Pauketat et al. | 1996 | An Archaeological Survey of the Horseshoe Lake State Recreation Area, Madison County, Illinois |
| 7214 | Wells | 1995 | Phase I Survey, East St. Louis Housing Authority |
| 7215 | Wells | 1995 | Phase I Survey, East St. Louis Housing Authority |
| 7217 | Wells | 1995 | Phase I Survey, East St. Louis Housing Authority |
| 7253 | Holley et al. | 1996 | Investigations at the West Borrow Pit Mound Group, Cahokia Mounds State Historic Site |
| 7475 | Halpin | 1996 | Phase I Archaeological Reconnaissance Survey for the Proposed Wetland Mitigation Project in St. Clair County, Illinois |
| 7582 | Mueller and Markman | 1996 | East St. Louis HUD Housing Project: A Phase I Cultural Resources Survey |
| 7681 | Keller et al. | 1994 | Cahokia's Western Periphery: Recent Investigations on the Fingerhut Tract |
| 7966 | Witty | 1996 | SBI 4 Spur Ohio Avenue Between IL Route 203 and Madison Road |
| 8385 | Harl | 1997 | Monitoring of Replacement of Mississippi River Transmission Natural Gas Pipeline Through Four City Blocks, Fairmont City |
| 8622 | Kelly | 1997 | Metro East Emergency Project: Phase I, II, and III Archaeological Investigations of the Drainage Ditch Cleanout in Madison and St. Clair Counties, Illinois |
| 8854 | Holley et al. | 1998 | Promontory Mounds at the Cahokia Mounds State Historic Site: Results of the 1997 Field School Investigations |
| 9116 | Vollman | 1998 | Fairmont City Tract Phase I/II for Southwestern Bell Mobile Systems |
| 9183 | Watters et al. | 1997 | Investigations at Mounds 59, 60, 94 and the West Borrow Pit Group, Cahokia Mounds State Historic Site |
| 9557 | Burns and Wells | 1998 | Petra Chemical Sewer Extension Monitoring |
| 9655 | Booth and Koldehoff | 1999 | The EWP Project: Archaeological Investigations for the 1998 Metro East Ditch Cleanout Project in Madison and St. Clair Counties, Illinois |
| 10237 | Conner | 1997 | Phase I Archaeological Survey for Historic Properties Within Canteen Creek and Cahokia Canal Ditch Channel Rehabilitation, East St. Louis Flood Protection Rehabilitation Project, Madison and St. Clair Counties, Illinois |
| 10359 | Rohrbaugh | 2000 | Phase I Archaeological Reconnaissance Survey of Proposed Parking Lots at Gateway International Raceway, St. Clair County, Illinois |
| 10551 | Ott | 2000 | Phase I Cultural Resource Survey: Joyner-Kersee Center |
| 10676 | Witty | 2000 | FAP 582; IL 111 Bridge Replacement |

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

| Report Number | Author(s) | Year | Title |
|----------------------|---------------------|-------------|--|
| 10800 | Keeney | 2000 | Phase II NRHP Eligibility Testing of Site 11S1206 |
| 10914 | Witty | 1999 | FAP Route 582 (IL 111) from Collinsville Road (US 40) to Railroad Overpass South of Maryland Ave |
| 11177 | Boone | 2000 | FAP-999 New Mississippi River Crossing Wetland Mitigation Site Number 1 |
| 11199 | Cramer and Naglich | 2001 | Monitoring Installation of Replacement Watermain, Fairmont City, Illinois |
| 11719 | Witty | 2001 | 46th, 48th, 49th and Hallows |
| 11764 | Neal | 1999 | Parsons Place Apartments Phase I |
| 11990 | Naglich and Radziul | 2001 | Monitoring of Water Main Installation on Maryland Road, Fairmont City |
| 12380 | Harl | 2002 | Cultural Resource Survey of the Proposed 44th Street Extension, Fairmont City, Illinois |
| 14014 | Rickers and Wiant | 2004 | Phase I Archaeological Survey for Proposed Central City Property Residential Development, City of East St. Louis |
| 14169 | Latham | 2003 | Parsons Place Apartments Phase I |
| 14437 | Bailey and Kelly | 2004 | Washington Park Charles Manners School |
| 14518 | Witty | 2004 | FA 999/NMRC Detention Ponds North of I-55/70; East of IL 203 |
| 14554 | Ott | 2003 | Phase I Cultural Resource Survey (Revised), Washington Park Tract |
| 14886 | Hjelsand | 2005 | Phase I Cultural Resource Survey: Emerson Park Subdivision, East St. Louis |
| 15440 | Witty and Koldehoff | 2005 | FAI/I-55/70 Bowman Avenue. & I-55 Bowman Maintenance Yard Pump Station Rehabilitation |
| 15602 | Unknown-Missing | Not Listed | Unknown-Missing (Trileaf 8921) |
| 15725 | McLaughlin | 2006 | A Phase I Cultural Resource Survey of a Proposed Sewer Line in Fairmont City, Illinois |
| 16015 | Kelly | 2006 | Jones Park Pavilion and Play Area |
| 16115 | Witty | 2006 | FAI 70 (I-55/70) Section 82-5 Parcel 800XC21 |
| 16293 | Baskett | 2007 | Phase I Cultural Resource survey: River City Development-Phase II East St. Louis |
| 16703 | Witty | 2007 | Old Madison Road Improvements |
| 17619 | Booth | 2008 | Fairmont Wetland Interpretive Project |

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

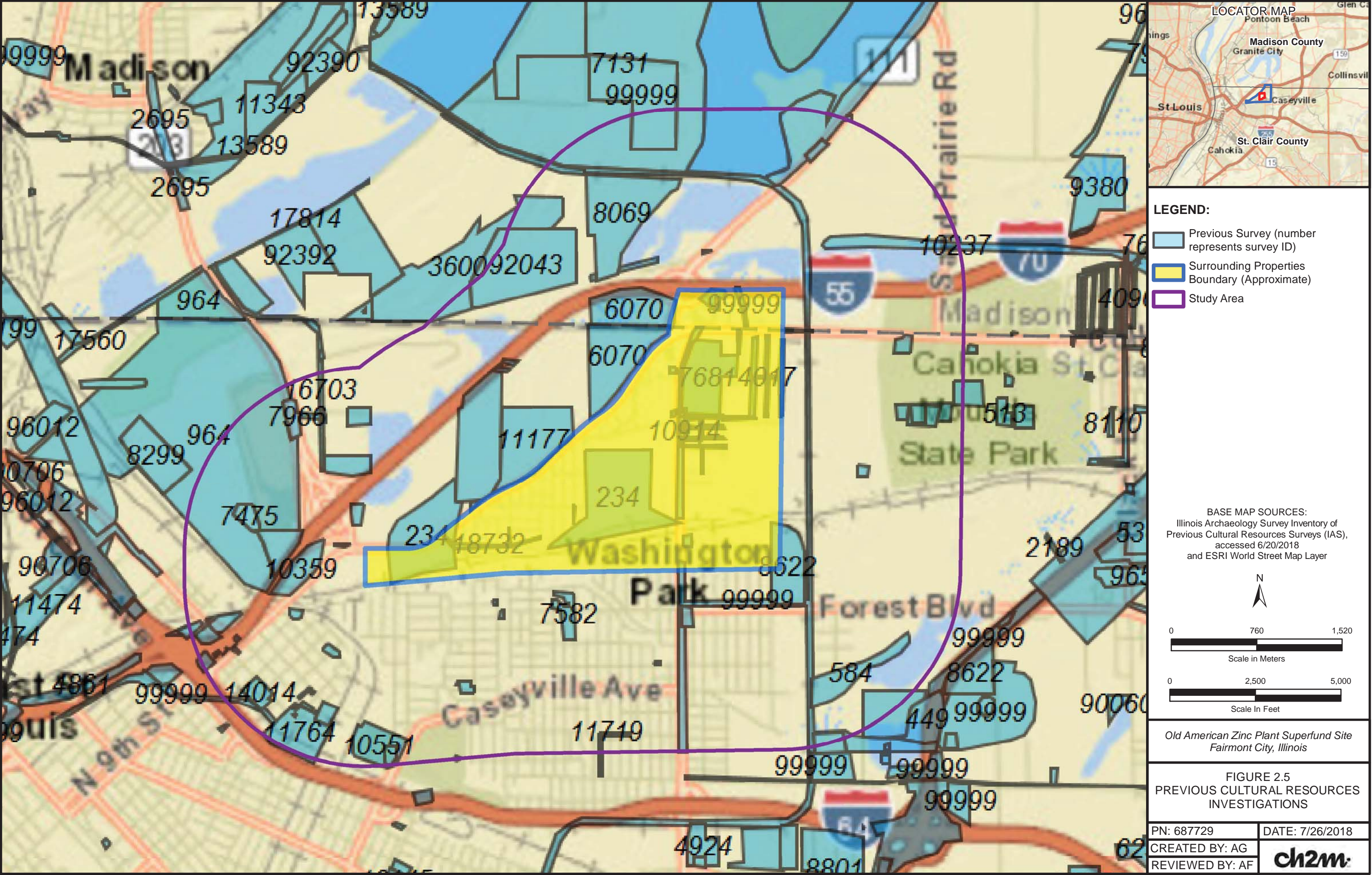
| Report Number | Author(s) | Year | Title |
|---------------|-------------------|------|--|
| 18732 | Klein and Hawkins | 2010 | A Phase I Cultural Resource Survey of a Proposed Water Line in Fairmont City, St. Clair County, Illinois |
| 90002 | | | No Record Found in CRM Report Database |
| 90706 | | | No Record Found in CRM Report Database |
| 92043 | | | No Record Found in CRM Report Database |
| 92043 | | | No Record Found in CRM Report Database |
| 96012 | | | No Record Found in CRM Report Database |
| 99999 | | | Multiple Occurrences - No Record Found in CRM Report Database |

*Shaded Rows indicate previous cultural resource surveys within the project footprint

2.7.1 Cultural Resource Reports within Project Area

In 1981, Resource Analysis, Inc. reported on the archaeological reconnaissance of two alternative Trailer of Flat Car locations for the East St. Louis Marge Project area (Survey #234; Dorwin 1981). At the time of this literature review, a full report was not available for review via the Illinois CRM Report Archive. Klein and Hawkins (2010; Survey #18732) have reported that the 1981 survey was conducted to evaluate borrow locations associated with the Marge Project, and that no archaeological sites were recorded within the survey area. However, Harl (2002; Survey #12380) states that the 1981 survey documented three small lithic scatters, but that no diagnostic artifacts were recovered, and none of the material was deemed significant. It is also noted that the area examined as part of the 1981 survey was heavily impacted by modern industrial development (Harl 2002).

The Southern Illinois University at Edwardsville conducted an archaeological investigation on behalf of the Village of Fairmont, Illinois, for a proposed sanitary sewer collection system in St. Clair and Madison Counties (Lopinot et al. 1989; Survey #4017). The project was located within five of the 23 divisions of the Cahokia Mounds site, and 7.7 kilometers of sewer line trenching was subjected to archaeological investigation and excavation monitoring. The impacted Cahokia Mound site divisions were 11MS1/2 within Madison County and 11S34/6, 7, 8, and 9, all of which are also located within the current Project footprint. No cultural resources were identified within section 11S34/9; however, multiple Cahokia occupation areas with numerous cultural features and artifacts were recorded within the remaining four sections. Within division 11S34/6, one Emergent Mississippian (Edelhardt Phase, A.D. 950-1000) occupation with three pit features (located near the Macke site, ISM site No. S-164) and 26 features, including pits, buried lenses, basins, post molds, wall trenches, and structures associated with the Master Feed and Seed Company Site (Lohmann to Stirling Phase, A.D. 1000-1150), were identified. Results from division 11S34/7 also revealed two occupation areas: a wall trench and basin feature located south of Collinsville Road and a wall trench structure identified near the location of Powell Mound. Investigations within division 11S34/8 resulted in an abundance of lithic and ceramic material recovered, including 556 debitage fragments and tools. Identified lithic tools in this area included a flake point, chert hammerstone, two retouched flakes, 36 microdrills, a quarzitic sandstone mano, and 34 pieces of



rough rock (Lopinot et al. 1989). One historic feature was also identified within 11S34/8, composed of a molded dark-green glass base fragment, and whiteware, spongeware, salt-glazed stoneware, and an ironware fragment dating to the late 1880s. Lastly, five Mississippian Period features were uncovered in division 11MS2/1. These include a wall trench structure, a post mold or wall trench feature, two additional potential structures, and a pit feature. The project fieldwork consisted of archaeological monitoring while the trenches for the proposed waterlines were dug, and therefore additional survey within the project area was not recommended. However, the authors recommend that for future monitoring activities within the Cahokia site, areas with high potential to contain cultural resources should be excavated ahead of the construction activity, so that features may be mapped and potentially mitigated prior to proposed mechanical disturbance (Lopinot et al. 1989).

Archaeologists from Washington University and Southern Illinois University at Edwardsville presented the results of investigations of the Fingerhut Track on the western periphery of Cahokia in 1994 (Keller et al. 1994; Survey #7681). The researchers state that at the time of the report, recent studies of the Fingerhut Track had been completed by students, instructors, and volunteers associated with Washington University, Southern Illinois University, and the Cahokia Mounds Archaeological Society chapter of the Illinois Association for the Advancement of Archaeology. Much of this work was completed ahead of the construction of a golf driving range, today known as the Indian Mounds Golf Course. These efforts lead to several excavation areas, and the flagging and mapping of 1,795 surface artifacts. The report finds that the earliest occupation of the Fingerhut Track occurred during the Early Woodland Period (Marion Phase). Later, scattered Lohman and Stirling Phase Mississippian settlements occupied the area, with much of the activity of the tract attributed to lithic and shell work areas, and perhaps the production of tribute items due to the presence of microlith material and basalt residue (Keller et al. 1994). Additionally, an early nineteenth century historic occupation was noted on the eastern portion of the tract.

In 1994, Markman & Associates performed a Phase I cultural resource survey of approximately 125 acres for the proposed Cahokia Creek Camping and Recreational development project (Markman and Mueller 1994; Survey #6070). The project included the construction of roads, trailer hookups, and facilities for campers and recreational activities. A small portion of this survey overlaps with the current project footprint near Collinsville Road and Illinois Route 111. The authors found that much of the survey area consisted of low-lying and saturated wetland areas, so that shovel testing was conducted only on dryer, low rises across the landscape (Markman and Mueller 1994). No cultural resources were encountered within the survey area. The surveyors also note that surrounding site locations are situated above 125 meters (410 feet) above mean sea level (amsl), whereas the highest elevation within the project area was 123 meters (405 feet) asml.

The Archaeological Research Center of St. Louis, Inc. conducted archaeological monitoring during trench excavation for an approximately 1,200-foot-long section of natural gas pipeline along Maryland Avenue, Delmar Road, and Kinder Road, on behalf of NorAm Gas Energy Corporation (Harl 1997; Survey #8385). A low-density prehistoric artifact scatter consisting of Burlington chert flakes and one shell-tempered ceramic sherd fragment were found near Maryland Avenue. Early twentieth century historic material was also encountered throughout the excavation area. One possible pit feature was identified near Kinder Road; however, no artifacts were recovered within the feature, and no temporal association could be established (Harl 1997). No additional work within the project area was recommended.

In 1997, the Illinois Transportation Archaeological Research Project presented the results of Phase I, II, and III archaeological investigations for the Metro East Emergency Project in Madison and St. Clair Counties (Kelly 1997; Survey #8622). For this project, 213 hectares (86 acres) were surveyed for six ditch cleanout areas, as well as locations for sediment stockpiling and burn pits for tree removal. One small portion of this large survey is located within the current project footprint, which includes the area surveyed for Reach E, located near the junction of Harding Ditch north of I-64 through Washington Park to the outlet at Indian Lake near I-55/70 in Fairmont City (Kelly 1997). Four archaeological sites and one

isolated find were recorded in this area east of North 62nd Street (sites 11S1184 through 11S1188). Site 11S1184 is partially mapped within the project footprint and is recorded as a small Emergent Mississippian-period occupation. The remaining four sites include a probable Mississippian farmstead (11S1185), two unspecified prehistoric lithic scatters (11S1186 and 1187), and one chert flake recorded as an isolated find (11S1186).

Booth and Koldehoff (1999; Survey #9655) reported on the results of the Metro East Ditch Cleanout Project (EWP Project) completed by the Illinois Transportation Archaeological Research Program (ITARP) on behalf of the Natural Resources Conservation Service (NRCS). This project was composed of 436 hectares (1,077 acres) of archaeological survey across Madison and St. Clair Counties within the American Bottomland region. In total, 16,484 prehistoric and 3,264 historic artifacts were recovered. Additionally, 59 archaeological sites were recorded, and 14 previously inventoried sites were revisited. Only a very small portion of this expansive survey effort falls within the current project footprint. This includes the 1.1-hectare (2.7-acre) Washington Park Spoils area, which the authors note is located outside of the Cahokia Mounds site boundaries (Booth and Koldehoff 1999). At the time of survey, the area was used as a municipal dumping ground, and no archaeological resources were identified.

In 1999, ITARP completed an archaeological survey of about 4.5 acres for a ditch cleanout project located along Route 582 (IL 111) from Collinsville Road to the railroad overpass south of Maryland Avenue (Witty 1999; Survey #10914). Approximately 85 percent of the project was located within the National Register boundaries of the Cahokia Mounds site. The project was also located within the Ananab Tilps site (11S1142). Ten shovel tests were excavated within the project area, and archaeological monitoring was recommended during construction activities due to proximity to both the Cahokia Mounds site and Ananab Tilps site (Witty 1999).

Also in 1999, Hanson Engineers Incorporated performed a Phase I/II cultural resource survey of 0.8 acre for a Southwestern Bell Mobile systems telecommunications tower within the Fairmont City Tract of the Cahokia Mounds site (Vollman 1999; Survey #9116). Since the project was located within the Cahokia Mounds site, archaeological testing consisted of two mechanical backhoe trenches to remove potentially disturbed top soil layers in order to identify potential buried cultural deposits. Results of the trenching indicated at least one Mississippian Period house basin, multiple pit features, possible intact midden areas, and historic-era post molds (Vollman 1999). Recovered artifacts included one Scallorn point, one non-diagnostic rim sherd, multiple shell, grog, or grit tempered sherds, several Burlington or pebble chert cores and micro-cores, multiple micro blades and drills, fire-cracked rock, and numerous chert waste flakes. A general temporal association of Lohmann or Stirling Phase Mississippian was assigned to the site. Additional Phase III archaeological investigations were recommended for the site should the development of the telecommunication facility proceed (Vollman 1999).

The Illinois Transportation Archaeological Research Program conducted a 26.9-hectare (66.5-acre) archaeological survey within a portion of an abandoned golf course proposed to be converted into a wetland in October 2000 (Boone 2000; Survey #11177). Most of the survey area lies outside of the Project footprint and to the north of Collinsville Road. However, small portions of the survey extend into the current project boundary, south of Collinsville Road. The survey identified site 11S1445, which is also partially located within the project footprint along Collinsville Road, and consists of both prehistoric and historic material. The prehistoric element is suggestive of a Late Woodland to Mississippian Period occupation and includes an artifact assemblage composed of debitage flakes, fire-cracked rock, shell-tempered ceramic sherds, burned clay fragments, and one Madison projectile point (Boone 2000). The historic component of 11S1445 is described as an Early Industrial to Post-War artifact scatter (1871-Post 1946; Boone 2000). A geomorphological analysis conducted as part of this survey effort also found that the area along Collinsville Road contained a high potential for buried archaeological deposits due to its placement on a sandy terrace scarp (Boone 2000). The report recommends Phase II testing in the area if construction activities cannot be avoided.

In 2001, the Archaeological Research Center of St. Louis, Inc. reported on the results of archaeological monitoring performed during the installation of an eight-inch replacement water line extending approximately 100 meters (328 feet) along Jondro Road, north of Collinsville Road, in Madison County (Cramer and Naglich 2001; Survey #11199). The authors note that the project area was located entirely within the Cahokia Mounds NHL and near Powell Mound (Mound 86). Powell Mound was second in size only to Monks Mound and was the central aspect of the Power Mound group. The Powell Mound group included mound numbers 84, 86, 87, and 88 (and potentially Jondro Mound 87 and Mound 85). However, Cramer and Naglich (2001) report that Powell Mound was nearly completely destroyed by steam-shovel excavation between December 1930 and February 1931, with sediment from the mound used to fill nearby low areas for cultivation. The mound was further destroyed by the construction of a gem store in the 1960s. Archaeological investigations conducted both during and after the mechanical leveling of the mound indicate that it was initially constructed as three small core mounds and later consolidated into a single platform mound over the course of five construction episodes (Ahler and DePuydt 1987). The site location was found to have been initially occupied during the Emergent Mississippian Period, with the construction of the mound likely taking place during the Sterling phase of the Mississippian Period, ca. A.D. 1100-1200 (Cramer and Naglich 2001). Two burial chambers were located near the top of the platform, one of which was examined in 1931. This chamber measured nearly six meters (20 feet) and contained bundle burials placed on a bed of cedar and bark and covered with shell garments (Young and Fowler 2000, Fowler 1989). The top of the platform at Powell Mound also included a pyramidal mound stage with a large cedar post, which formed a line pointing east to a similar post on the southwest corner of the first terrace on Monks Mound (Ahler and DePuydt 1987). Cramer and Naglich (2001) also report that archaeological surveys in the surrounding area have revealed a shell bead burial at mound 87 (Fowler 1989), Mississippian village occupation north of the Powell Mound (O'Brien 1972), and Mississippian houses and burial grounds south of the Powell Tract within the Fingerhut Tract (Fowler 1989). Despite the high probability of encountering cultural resources, Cramer and Naglich state that only previously disturbed soils, a brick pavement layer under the existing Jondro Road, and modern material such as plastic and metal were documented during monitoring. No additional work in the project area was recommended (Cramer and Naglich 2001).

The Archaeological Research Center of St. Louis, Inc. also conducted archaeological monitoring during trenching for an approximately 300-meter-long section of water line located along Maryland Avenue (Naglich and Radziul 2001; Survey #11990). Despite the project area being located within the Macke Site and western portion of the Cahokia Mounds site, no cultural resources or artifacts were identified. Prior disturbance from the installation of a natural gas pipeline and the construction of Maryland Avenue were attributed to the lack of intact cultural deposits (Naglich and Radziul 2001). No further work was recommended for the project area.

Harl (2002; Survey #12380) conducted a cultural resource survey for a proposed 78-meter (255-foot) water line located along the eastern side of 44th Street. The project area is described as being previously disturbed due the proximity to the existing sidewalk and roadway construction, and as a result of an existing drainage pipe. All cultural material observed during the survey was modern, and no archaeological sites were identified. No additional cultural resources investigation was recommended for the project area (Harl 2002).

In 2006, The Archaeological Research Center of St. Louis, Inc. completed a Phase I cultural resources survey for a proposed 198-meter (650-foot) sewer line to service a structure located at 5501 Congress in Fairmont City, Illinois (McLaughlin 2006; Survey #15725). The report notes that the project area is located within the Fingerhut site area, included with division 11S34/7 of the Cahokia Mounds site. No cultural features or artifacts were identified following a pedestrian and shovel testing survey. Like previous surveys conducted in the area for utility installation, the lack of cultural material was attributed to previous disturbance, likely resulting from a manmade drainage that crossed the project (McLaughlin 2006). No additional work was recommended for the project area.

The Archaeological Research Center of St. Louis, Inc. completed a 1.7-acre Phase I cultural resource survey for a proposed 1,127-meter new water line extending along Roselake Road and North 38th Street in Fairmont City (Klein and Hawkins 2010; Survey #18732). The survey area was subjected to archaeological testing consisting of pedestrian walk over, shovel testing, and seven deep soil auger tests. No cultural resources were identified during the survey, and the authors note that the lack of cultural material may be due to prior disturbance resulting from the nearby residential and industrial development. Project clearance was recommended; however, construction monitoring was encouraged because of the potential for deeply buried deposits (Klein and Hawkins 2010).

Survey #90002 and one instance of survey #99999 are mapped in the northern portion of the project area, south of the I-55/I-70 corridor and north of Collinsville Road. Additional areas of 99999 are mapped near the Indian Mounds Golf Course. As stated in Section 2.7, none of these survey numbers correspond with available reports in the CRM report database. However, several have reported that multiple previous archaeological investigations have occurred in the area. For instance, McLaughlin (2006) informs that Charles Bareis (1968) examined the Powell Mound group area, and revealed many Mississippian houses, pit features, and artifacts. McLaughlin states that Bareis also conducted investigations within the Fingerhut Tract in 1962, which uncovered several features related to a Mississippian burial ground. Further, work completed by Southern Illinois University at Edwardsville at the Fingerhut Tract for the widening of Highway 111 and construction of the Indian Mounds Golf Course increased the reported size of the Mississippian burial ground in the area and suggested that there may be two separate groups of burials linked to both Lohmann and Stirling Phase occupations (Witty 1993).

2.8 County Historic Maps

To better understand the prehistoric and historic landscapes for the Project, CH2M reviewed available historic mapping depicting the project area (Table 2.4). Historical atlases dating to the late-nineteenth century depict the project area as a predominantly rural area with more developed areas located to the west toward East St. Louis.

Table 2.4. Historic Maps.

| Date | Publisher | Map Title |
|------|--|--|
| 1861 | Holmes and Arnold | <i>Madison County, Illinois, 1861 Atlas</i> |
| 1863 | J.W. Holmes | <i>Map of St. Clair County, Illinois</i> |
| 1873 | Brink, McCormick, & Co. | <i>Illustrated Encyclopedia and Atlas Map of Madison County, Ill</i> |
| 1874 | Warner and Beers | <i>An Illustrated Historical Atlas of St. Clair County, Illinois</i> |
| 1892 | Riniker, H., Robert Hagnaurer, and George K. Dickson | <i>New Atlas of Madison County, Illinois</i> |
| 1899 | Guy Beauman | <i>Map of St. Clair County, Illinois</i> |
| 1906 | Ogle, George A. & Co. | <i>Madison</i> |
| 1936 | Frank & John Hollman | <i>Current and Historical Atlas – St. Clair County, Illinois</i> |

2.8.1 St. Clair County

The 1863 and 1874 atlases of St. Clair county depict the project area as largely rural and agricultural, with relatively few landowners listed in the vicinity. Cahokia Creek is shown flowing generally east to west toward the Mississippi River, and Indian Lake is located to the west of the project area. The Ohio and Mississippi Railroad is depicted running east-west south of the project area. In 1874, the St. Louis,

Vandalia & Terre Haute Railroad Company is illustrated running alongside of the Ohio and Mississippi Railroad. Additionally, the established community of Caseyville is seen to the east, while East St. Louis and Illinois City has been developed to the west. On both the 1863 and 1874 St. Clair atlases, the town of Fairmont City is not depicted. By 1899, East St. Louis has expanded in size, and developed further to the east. Indian Lake is also no longer depicted in 1899, and the area now appears parceled between landowners. The railroads to the south of the project area are illustrated as the Vandalia Line and the B&O Railroad in 1899. Fairmont City does not appear as an established community. By 1936 however, Fairmont City is shown northeast of an expanded East St. Louis. In addition, Washington Park is now depicted to the south of Fairmont City, and adjacent to East St. Louis. The railroad previously labeled as the Vandalia Line and B&O Railroad is now listed as the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad.

2.8.2 Madison County

Review of the 1861 Madison County atlas reveals that much of the project area is pastoral, with a cluster of structures shown near the Village of Canteen. Both Cahokia Creek and Horse Shoe Lake are illustrated to the north. To the east, the established town of Collinsville can be seen. Interestingly, Monks Mound is illustrated south of Cahokia Creek, along with “Hotel Hubbards” to the east of the mound. Review of the 1873 atlas indicates that the area appears much the same as it did in 1861. However, more detail is provided in the area of Cahokia Mounds, and several more mound locations are depicted. In addition, a small levee is shown located south of Cahokia Creek and north of the illustrated mound locations. The small village of Canteen also appears to have been moved further to the west and is smaller in size. On both the 1892 and 1906 atlases, the area again appears mostly unchanged. However, the small levee depicted on the 1873 map is not included.

Summary and Recommendations

The literature review revealed that one archaeological resource is listed as an NHL and is on the NRHP and is a UNESCO World Heritage Site, 57 additional IAS-listed archaeological sites, including six NRHP-eligible sites, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project. Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project.

The most significant of the previously inventoried resources within the project area is the Cahokia Mounds site, which was listed as an NHL in 1964 and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most prominent archaeological sites in North America. Portions of eight out of the 24 Cahokia Mound site divisions fall within the project area. This site is also a UNESCO World Heritage Site; however, the current project boundary is located outside of the current UNESCO World Heritage Site boundaries. The remaining archaeological resources within the project area are composed of Late Woodland through Mississippian Period habitation sites, resulting from the region's heavy use during these periods. Further, many of the small sites in the area are recorded with mound components of their own.

In addition, it is important to highlight that several IAS-listed resources located both within and outside of the project area are recorded as falling under the Illinois HSRPA Burial Law. For this reason, careful consideration of potential to encounter both prehistoric and historic era human remains should be taken.

Historic mapping indicates that agricultural activities dominated the project and surrounding area during the historic period, with railroad and industrial development increasing throughout the twentieth century in both St. Clair and Madison Counties. Potential historic archaeological resources within the project are likely to be related to agricultural, domestic, or industrial activities.

Review of previously identified archaeological sites and historic mapping indicate a high probability of both prehistoric and historic archaeological deposits to be located in the project's vicinity. Within the project footprint, prehistoric sites identified have often been large and complex, especially those found in association with the Mississippian Period Cahokia Mounds or East Metro Mounds complexes. Analysis of previous cultural resource reports indicate that potential site density may be higher within the northeast portions of the project area, closest to established boundaries of the Cahokia Mounds site, the Powell Mound Tract, and the Fingerhut Tract (Lopinot et al. 1989; Keller et al. 1994; Cramer and Naglich 2001). In addition, several of the previous archaeological investigations conducted within the Fairmont City neighborhood have encountered previously disturbed soils and no cultural resources in some cases (Naglich and Radziul 2001; Harl 2002; McLaughlin 2006; Klein and Hawkins 2010). Other areas that appear to have lower cultural resource probability include low-lying wetland environments (Markman and Mueller 1994). The parcels currently included in the remediation plan are located outside of the current UNESCO World Heritage Site boundaries. However, due to the surrounding high site density and documented regional prehistoric settlement, the Project area as a whole should be considered as having a high potential to contain archaeological and historic resources.

The project as currently designed consists of soil sampling from the top 24 inches below ground surface. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. Following removal of highly contaminated soils, a barrier or cap will be emplaced, followed by a layer of clean

soils. Therefore, this project is unlikely to impact deeply buried archaeological deposits within the selected parcels. However, if project plans change, additional parcels are added, or archaeological materials are identified during the soil sampling and removals, additional consultation with the Illinois Historic Preservation Division is strongly recommended.

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Unanticipated Discovery Plan and
Archaeological Monitoring Plan for
Cultural Resources
Old American Zinc Plant Superfund
Site and Surrounding Areas
Remediation Project, Saint Clair and
Madison Counties, Illinois

WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



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| Figure 1 | Project Overview |
|----------|------------------|

Acronyms and Abbreviations

| | |
|---------|---|
| CH2M | CH2M HILL Engineers, Inc. |
| Council | Advisory Council on Historic Preservation |
| EPA | Environmental Protection Agency |
| IHPA | Illinois Historic Preservation Agency |
| NHPA | National Historic Preservation Act |
| NPS | National Park Service |
| NRHP | National Register of Historic Places |
| OAZ | Old American Zinc |
| QPA | Qualified Professional Archeologist |
| UDP | Unanticipated Discovery Plan |

Unanticipated Discovery Plan

Section 106 of the National Historic Preservation Act (NHPA) is identified in the U.S. Environmental Protection Agency (EPA) 2012 Record of Decision for the Old American Zinc Plant (OAZ) Superfund Site as an applicable or relevant and appropriate requirement, because of the nearby presence of the Cahokia Mounds State Historic Site, which is a National Historic Landmark and UNESCO World Heritage Site. The site is also listed as a historic property on the National Register of Historic Places (NRHP). A portion of the project area overlaps the boundary of Cahokia, as mapped by the Illinois Historic Preservation Agency (IHPA) and the NRHP. For EPA to meet the requirements of Section 106 of the NHPA, as defined in the Advisory Council on Historic Preservation (Council) regulations "Protection of Historic Properties" (36 Code of Federal Regulations Part 800), and following consultation with the Illinois State Historic Preservation Office (SHPO), the EPA has developed the following Unanticipated Discovery Plan (UDP) and Archaeological Monitoring Plan for use during soil sampling and related excavations in Saint Clair County and Madison County, Illinois. This plan will be implemented should new or additional historic properties be encountered during soil sampling, related excavation, and other ongoing activities on the proposed project (undertaking). This plan has been developed through consultation with the Illinois SHPO and in accordance with the regulations embodied in the "Protection of Historic Properties" issued by the Council (revised August 2004, www.achp.gov/regs-rev04.pdf). EPA and its cultural resources consultant, CH2M HILL, Inc. (CH2M), reviewed Illinois legislation (Illinois Compiled Statutes, Sections 3410, 3420, 3435, and 3440), which was used in the development of this UDP.

Termed "unanticipated discovery" or "post-review discovery," the identification of new or additional cultural resources during implementation of an undertaking typically occurs in the case of projects that involve excavation or ground-disturbing activities.

1.1 PROCEDURE WHEN CULTURAL MATERIALS ARE OBSERVED

The following measures will be implemented should an unanticipated cultural resource discovery be made by EPA, CH2M, any other contractor, or any subcontractor during construction of the proposed undertaking:

1. A Secretary of the Interior Qualified Archaeologist will be present during ground disturbing activities to monitor for the presence of previously undiscovered cultural resources.
2. The areal extent of all excavation areas should be recorded with GPS and dimensions measured. Excavated areas should be sketched on aerial photograph backdrops, as well. Profiles of excavation block walls will not be necessary, but a general measurement of the depth of each excavation area should be recorded. Areal extent of exposure of B-horizon should be recorded within each excavation area if not entirely exposed.
3. ALL exposed features will be mapped in plan. This includes major historic Euro-American or modern disturbances such as old house foundations or yard features (privies, cisterns, etc.). When only historic Euro-American or modern features are encountered a sketch map will suffice, however feature dimensions and relative distances should be measured and noted on the map. Scaled plan maps will be made of all exposed Pre-Columbian features and deposits. Feature dimension should be measured, and any exposed material noted. Fill colors and textures should be described, as well.

4. If human remains are encountered, all work will cease in the area and the coroner and SHPO archaeologist will be notified. Additional details are provided in the section below.
5. In some instances, a feature or deposits may need to be formally excavated even if remediation excavations will not impact them further. These cases will likely be rare and may not occur at all. For example, if an extraordinary artifact (i.e. figurines, tool caches, whole pots, etc.) is exposed at the top of a feature it should not be left in place. In some cases, excavation of the feature may be warranted (pit with a figurine, for example). The archaeologist may consult with the SHPO to determine the appropriate action for a feature or extraordinary artifact.
6. At the end of the 2018 work, a summary of monitoring activities will be prepared that, minimally, includes digitized maps showing the location of all observed excavated areas and feature plans.
7. Following the completion of the 2018 work, a plan will be developed for work to be conducted in 2019 in consultation with the Illinois SHPO.

In the case of an unanticipated discovery of human remains, EPA and CH2M will follow all relevant state and federal law, and recommendations regarding treatment of human remains as referenced above. EPA recognizes the importance of providing careful and respectful treatment for human remains recovered as an unanticipated discovery or as part of an archaeological investigation. In the event of an unanticipated discovery of human remains, EPA will consult with the NPS and IHPA as to the appropriate federally recognized tribes or other groups with which to consult. In coordination with the NPS, the IHPA, and other interested parties, a decision will be made for the treatment of the remains (for example, reburial, preservation in place, scientific study, sacred ritual, or a combination thereof). This protocol includes the following:

1. Should human remains be encountered, work in the general area of the discovery will stop immediately and the location will be immediately secured and protected from damage and disturbance. The area will be marked off with flagging, tape, or construction fencing.
2. The archaeologist will notify the coroner and SHPO archaeologist, Jeff Kruchten. Mr. Kruchten will contact Ms. Cobb, IDNR Archaeologist, who oversees the Human Skeletal Remains Protection Act. She will coordinate once the Coroner transfers jurisdiction.
3. Human remains, or associated artifacts will be left in place and not disturbed. No skeletal remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place and a plan of action has been developed.
4. The coroner and SHPO archaeologist will make the official ruling on the nature of the remains, being either forensic or archaeological.
5. If human remains are determined to be Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. The EPA will consult with the NPS, SHPO, and federally recognized tribal groups to develop a plan of action that is consistent with the Native American Graves Protection and Repatriation Act.

If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated in consultation with the Coroner, the IHPA, and other appropriate parties. Historic research and consultation with local authorities and historic experts will be conducted by Amy Favret, M.A., an archaeologist qualified to excavate and analyze human remains in Illinois, to try to determine the possible identity and affiliation of the remains and determine if there are any lineal descendants who should be consulted concerning the treatment of the remains. Notice of the discovery will be published in local media outlets for at least 3 days to assist in identification of lineal descendants.

Contact List

EPA Environmental Contact

Sheila Desai, EPA
77 West Jackson Boulevard
Chicago, IL 60604-3507
Email: desai.sheila@epa.gov
Phone: 312-353-4150

NPS Contact

Bob Bryson, Ph.D., RPA
Associate Regional Director, Cultural Resources
Midwest Regional Office
601 Riverfront Drive
Omaha, NE 68102
Email: robert_bryson@nps.gov
Phone: 402-661-1902 (Omaha, M-W)
402-437-5392 x107 (Lincoln, Th-F)
402-405-2136 Cell

Illinois Historic Preservation Agency Contact

Jeffrey Kruchten
Chief Archaeologist
Illinois State Historic Preservation Office
Illinois Department of Natural Resources
1 Natural Resources Way
Springfield, Illinois 62702-1271
Email: Jeffery.Kruchten@illinois.gov
Phone: 217-785-1279

Illinois Department of Natural Resources

Dawn Cobb
HSRP Coordinator, Archaeologist
Email: dawn.cobb@illinois.gov
Phone: 217-785-4992

St. Clair County Coroner

Calvin Dye
10 Public Square
Belleville, Illinois 42220
Phone: 618-277-8682

Madison County Coroner

Steve Nonn
157 N Main Street #354
Edwardsville, Illinois 62025

SECTION 2 – CONTACT LIST

Email: sponnn@co.madison.il.us
Phone: 618-692-7478

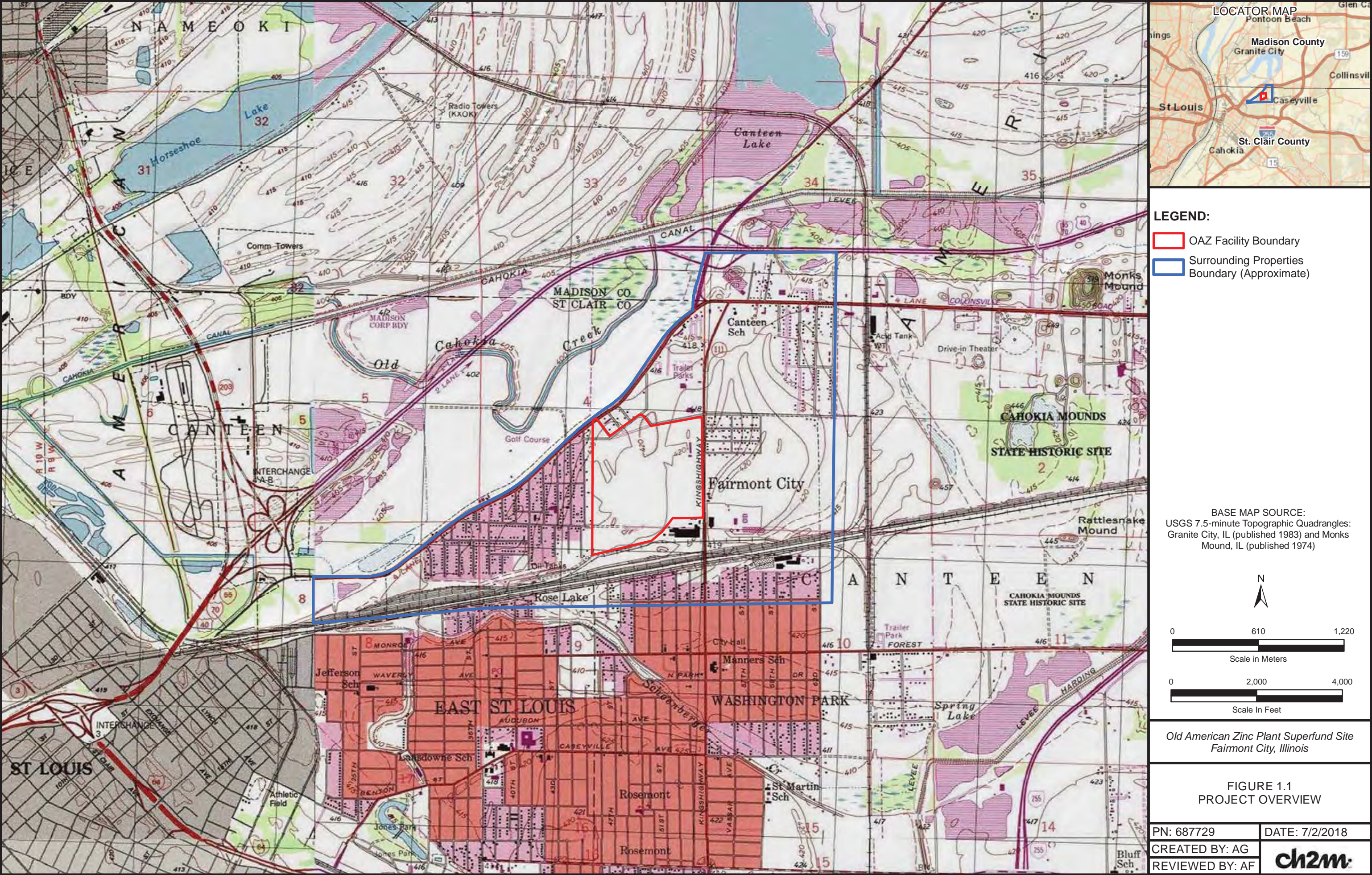
Other Interested Parties

CH2M Contact

Amy C. Favret, M.A., RPA
Senior Archaeologist, Principal
Investigator
CH2M
1880 Waycross Road
Cincinnati, Ohio 45240
Email: amy.favret@ch2m.com
Phone: 513-595-5642

Rachel Grand
Project Manager
CH2M
501 N Broadway
St. Louis, Missouri 63102
Email: rachel.grand@ch2m.com
Phone: 314-335-5069

Figure



USFWS



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Illinois - Iowa Field Office

1511 47th Avenue

Moline, Illinois 61265

Phone: (309) 757-5800 Fax: (309) 757-5807



IN REPLY REFER
TO:

Ms. Sheila Desai
U.S. Environmental Protection Agency, Region 5

November 14, 2018
Electronic Mail

Ms. Desai,

Thank you for your request for concurrence that the Old American Zinc (OAZ) Plant Superfund Site Surrounding Properties and Facility Area (FA) Remedial Action Project (Project), is not likely to adversely affect the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*).

The project involves the excavation of contaminated surface soils at residential and commercial properties and alleyways in the Surrounding Properties area and the removal of vitrified slag, redistributed ground slag, affected soils, and sediments from drainage ditches and Rose Creek within the FA. The project area covers an estimated 35 acres.

In the Surrounding Properties, no mature trees greater than 4 inches diameter at breast height will be removed. On the FA, a limited number of mature trees will be removed. To minimize impacts to Indiana bats, tree clearing within the FA will be restricted from April 1 — September 30. If tree removal must be conducted during that timeframe, potential roost trees will be visually assessed. If no bats are observed, clearing can commence. If bats are observed, tree removal will be postponed until after October 1, to the extent practicable.

Based on the above information, we concur that the Old American Zinc Remedial Action Project, as described in your letter, is not likely to adversely affect the Indiana or northern long-eared bats. The federally endangered decurrent false aster is also known to occur within the project area, but the project will have no effect on this species due to lack of suitable habitat.

This precludes the need for further action on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. If project plans change or portions of the proposed project were not evaluated, it is our recommendation that the changes be submitted for our review.

These comments are provided in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). If you have any questions regarding these comments, please contact me at the email address or the number below.

Aleshia Kenney
U.S. Fish & Wildlife Service
Illinois - Iowa Ecological Services Field Office

1511 47th Ave
Moline, IL 61265
ph: 309-757-5800 x 218
fax: 309-757-5807
aleshia_kenney@fws.gov



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: **SR-6J**

November 13, 2018

U.S. Fish and Wildlife Service
Attn: Review and Compliance
Southern Illinois Sub-Office
8588 Route 148 (mailing)
Marion, Illinois 62959

Subject: Endangered Species Act Coordination and Migratory Bird Treaty Act Compliance
Old American Zinc Plant Superfund Site
Fairmont City and Washington Park, Illinois
Surrounding Properties and Facility Area Remedial Actions

Dear Sir or Madam:

This letter is a revised consultation request for the U.S. Fish and Wildlife Service (USFWS) under the Migratory Bird Treaty Act and the Endangered Species Act of 1973 regarding our approach to federally protected species that possibly may be impacted by the Old American Zinc (OAZ) Plant Superfund Site Surrounding Properties and Facility Area (FA) Remedial Action Project (Project). The Project is being performed by the U.S. Environmental Protection Agency (EPA) or its contractors and/or representatives in accordance with a Record of Decision (ROD) dated September 11, 2012. EPA submitted an initial consultation request to USFWS on September 21, 2018. USFWS requested a revision to the Indiana bat section below. This letter has been revised to include that request.

The Project is in Fairmont City and Washington Park in St. Clair County, Illinois, and a nearby portion of Madison County, Illinois (**Figure 1**). The selected remedy for the Surrounding Properties involves the excavation of surface soils contaminated with arsenic, cadmium, lead, and/or zinc at residential and commercial properties and alleyways in the area. Vegetation clearing would be required to address human health concerns due to contamination levels in the soil. The selected remedy for the FA involves the removal of vitrified slag, redistributed ground slag, affected soils, and sediments from drainage ditches and Rose Creek within the FA, consolidation of FA and Surrounding Properties materials within a 35-acre consolidation area to be in the southwest portion of the FA, and design of a stormwater management system. EPA is currently in the Remedial Design phase of the Project which will be followed by the Remedial Action. It is anticipated that remediation will begin in 2019 and continue through late 2022.

Threatened and Endangered Species

Based on the official species list generated through the USFWS Information for Planning and Consultation (IPaC) system, the federally threatened and endangered species listed in Table 1 may occur at or near the Project site. **No critical habitat has been identified within the Project area.**

Table 1 – IPaC Results

| Common Name | Scientific Name | Threatened and Endangered Status |
|--------------------------------|-------------------------------|---|
| Indiana Bat | <i>Myotis sodalis</i> | Endangered |
| Northern Long-eared Bat | <i>Myotis septentrionalis</i> | Threatened |
| Least Tern | <i>Sterna antillarum</i> | Endangered |
| Pallid Sturgeon | <i>Scaphirhynchus albus</i> | Endangered |
| Spectaclecase (mussel) | <i>Cumberlandia monodonta</i> | Endangered |
| Illinois Cave Amphipod | <i>Gammarus acherondytes</i> | Endangered |
| Decurrent False Aster | <i>Boltonia decurrens</i> | Threatened |
| Eastern Prairie Fringed Orchid | <i>Platanthera leucophaea</i> | Threatened |

The following sections contain EPA's determination on the potential effects of the above-listed species.

No Adverse Effect

Indiana Bat

The Project is not within the final critical habitat for the Indiana bat. The Project will take place on the OAZ FA and Surrounding Properties and alleyways. Indiana bats hibernate in limestone caves, and pregnant females migrate to trees that serve as maternity colonies throughout the summer. Suitable roosting areas include under tree bark and in cavities or crevices of live and dead trees. Vegetation clearing would be required. In the Surrounding Properties, no mature trees greater than 4 inches diameter at breast height will be removed; as such, no potential roost trees would be impacted. On the FA, a limited number of mature trees will be removed. To minimize impacts to Indiana bat, conservation measures will be implemented. These include restricting tree clearing in the FA during April 1 – September 30. If tree removal cannot be conducted during that timeframe, potential roost trees will be visually assessed. If no bats are observed, clearing can commence. If bats are observed, tree removal will be postponed until after October 1, to the extent practicable. With the implementation of these conservation measures, it is not anticipated that the Project will have any adverse impacts on Indiana bat and their habitat.

Northern Long-eared Bat

The northern long-eared bat was listed after the ROD was issued and was not considered in the ROD. The Project is within the White-Nose Zone identified for the northern long-eared bat. Based on the Final 4(d) Rule, it would be considered an incidental take if tree-removal activities include one or both of the following: (1) removing a northern long-eared bat known occupied maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31, or (2) removing any trees within 0.25 mile of a northern long-eared bat hibernaculum at any time of the year. Based on the Illinois Natural Department of Natural

Resources Ecological Compliance Assessment Tool, northern long-eared bat habitat was not identified on or within the vicinity of the site. The Project does not propose to remove any known occupied maternity roost trees or remove any trees near hibernaculum; therefore, it would have no effect on this species.

Least Tern

Suitable habitat for the interior population of least terns includes barren to sparsely vegetated sandbars along rivers, sand and gravel pits, lake and reservoir shorelines, and occasionally gravel rooftops. The proposed action is located within a highly residential neighborhood and a highly industrialized property, and the existing land use and vegetation is characterized by maintained manicured lawns in the Surrounding Areas, and by sparsely vegetated land in the FA. Suitable habitat is unlikely to be present, and the Project activities are expected to have no adverse effect on least terns.

Pallid Sturgeon

Pallid sturgeon inhabit large silty rivers. Sediment removal is proposed within drainage ditches and Rose Creek, which are located in the FA. However, these waterbodies lack the necessary habitat to support pallid sturgeon; therefore, the Project is expected to have no adverse effects on this species. Additionally, erosion-control measures will be implemented during soil-disturbing activities to further protect water quality and indirect effects to pallid sturgeon.

Spectaclecase Mussel

Spectaclecase mussels are found in large rivers and are often found clustered in firm mud and sheltered beneath rock slabs, boulders, or under tree roots. Based on the USFWS IPaC results, spectaclecase mussels do not occur in the FA area, which is where proposed in-water work would occur. The project is expected to have no adverse effects on spectaclecase mussels. Additionally, erosion control measures will be implanted during soil-disturbing activities to protect water quality and mitigate indirect effects.

Illinois Cave Amphipods

This species lives in caves. This species is known to occur in three caves in Monroe County and was formerly found in St. Clair County, Illinois. Main threats to this species include water pollution from agricultural chemicals, septic systems, and dumping. The proposed action directly addresses water quality by removing soil contamination from the area. To further protect water quality, erosion and sediment control measures will be implemented during construction activities. Therefore, the Project is unlikely to have an adverse effect on Illinois cave amphipod.

Decurrent False Aster

Decurrent false asters inhabit moist, sandy floodplains and prairie wetlands along the Illinois River. Plant populations are heavily influenced on the annual fluctuations of the conditions and dynamic of the Illinois River hydrology. The biggest threats to this species include habitat destruction and topsoil runoff. The National Wetlands Inventory Mapper indicates that there are freshwater wetlands (PEM1C) in the OAZ south (Washington Township) section of the Project, the northern end of the FA, and other small pocket wetlands are likely to occur within the Project area. None of these are likely to provide suitable habitat for the decurrent false aster because none would be subject to river flooding, and none would be hydrologically influenced by the Illinois River. The Project is not expected to have an adverse effect on the decurrent false aster.

Eastern Prairie Fringed Orchid

The eastern prairie fringed orchid occurs in mesic to wet prairies, sedge meadows, fen, marsh, or marsh edges. Optimal habitat includes sunny wet meadows with grass and sedge dominated communities. However, this species has even been documented growing along roadside ditches that may provide this type of habitat. According to the National Wetlands Inventory Mapper, there is a freshwater emergent wetland (PEM1C) in the OAZ south (Washington Township) section and northern end of the FA. Based on review of historical aerial photography, wetlands present within the Project area are unlikely to provide suitable habitat for eastern prairie fringed orchid due to the disturbed conditions, encroachment of woody species, and apparent hydrology. Review of aerial photographs indicates that the wetlands flood to standing water conditions in late winter/early spring and then dry in summer and lack wet meadow characteristics during the typical growth period for the orchid. The project specifications will require that a wetland delineation be performed to confirm the presence and extent of wetlands prior to ground disturbance. It is likely that small pocket wetlands will be identified within the Project area, but none are likely to be suitable to support eastern prairie fringed orchid. Because the eastern prairie fringed orchid would not occur in the Project area, no adverse effects to this species would result.

Migratory Birds

Several migratory birds are identified on the USFWS IPaC resource list as potentially being present in the Project area. The typical breeding season ranges from April 1 to September 10. Two species that may occur in the Project area breed outside of the typical breeding season. The least bittern breeds from August 16 to October 31, and the bald eagle breeds from October 15 to August 31. The least bittern is a Bird of Conservation Concern only in particular Bird Conservation Regions. The least bittern is unlikely to occur in the Project area during its breeding season; therefore, migratory bird nesting would not occur past September 10. The bald eagle is not a Bird of Conservation Concern; however, it warrants special attention because it has a probability of presence in the Project area from October through August. Bald eagles typically nest in tall trees along major bodies of water and typically do not nest in areas where pedestrian human activity is high. The residential areas where trees would be removed are subject to pedestrian human activity. The FA is a former industrial area and tree removals are necessary for the FA remedial action. There are no known bald eagle nests in the immediate area, and nesting is unlikely due to the nature of the properties and the level of human activity.

Because the least bittern and bald eagle would not nest in the Project area, only the typical breeding season is addressed. No mature trees greater than 4 inches diameter at breast height will be removed from the Surrounding Areas. Mature trees will be removed from the FA. Prior to the removal, an inspection will be performed during the preconstruction meeting and again within 24 hours prior to clearing in consultation with EPA or its representative. If bird nests are in trees or shrubs designated for removal or obstructions that will be temporarily relocated and stored, the nests will be inspected for the presence of eggs or hatchlings. Written documentation of the inspection will be provided to EPA or its representative. If present, active nests will not be disturbed; the clearing will be halted, and EPA or its representative will consult with the Marion, Illinois, Field Office of the USFWS and other appropriate agencies to assure compliance with the Migratory Bird Treaty Act.

A copy of the prefinal remedial design report can be provided to the USFWS upon request. If USFWS has any questions or requires any additional actions or consultations, please contact me at:

U.S. EPA Region 5 Superfund Division
Remedial Project Manager
77 W. Jackson Blvd., SR-6J
Chicago, IL 60604
T: 312.353.4150
E: desai.sheila@epa.gov

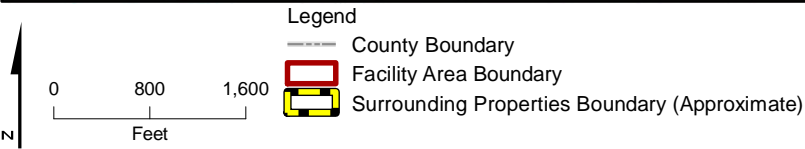
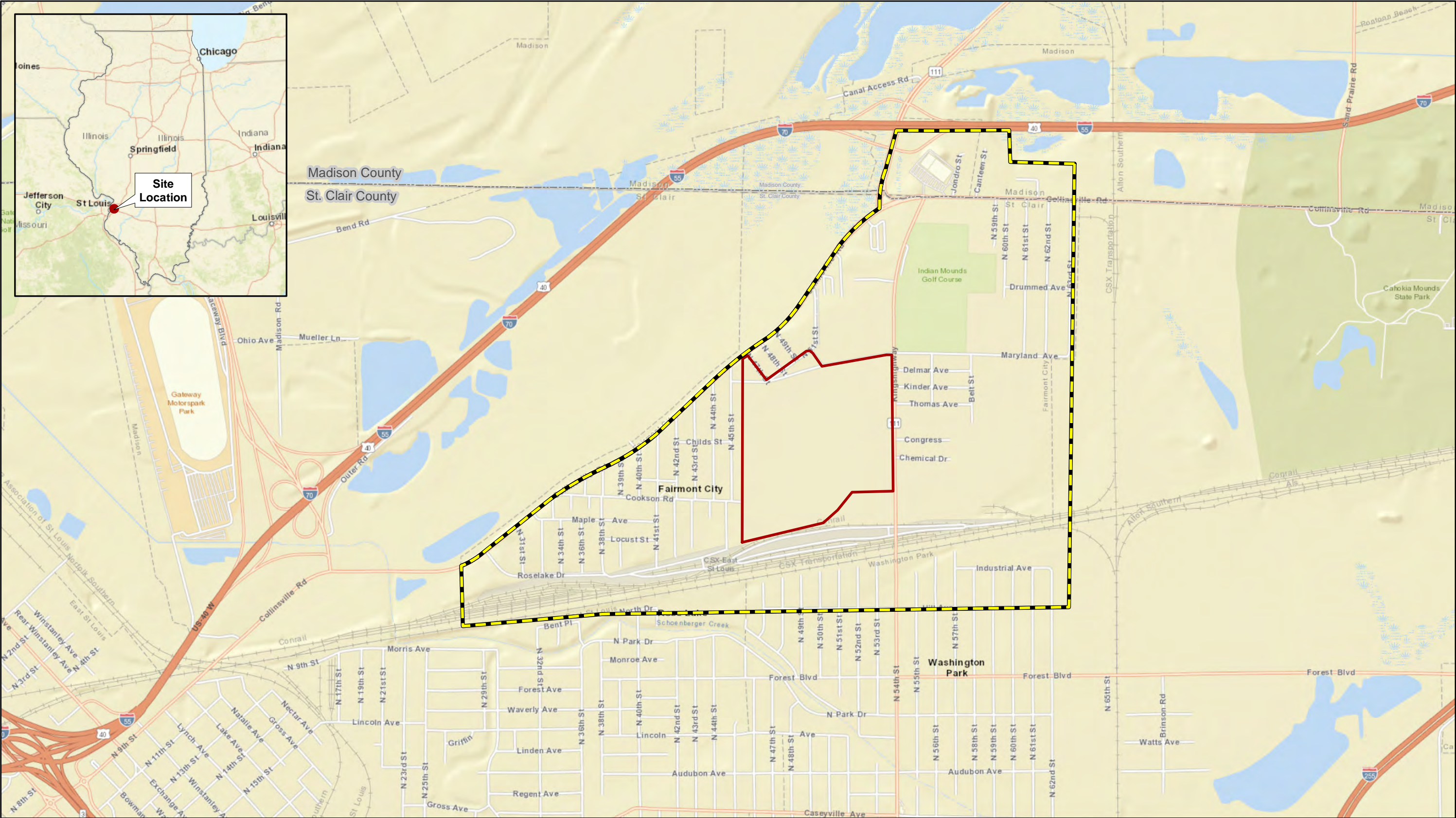
Sincerely,



Sheila Desai
EPA Remedial Project Manager

cc: Rachel Grand/CH2M Site Manager (e-mail)

Enclosures: Figure 1 – Site Location Map
Attachment 1 – USFWS Official Species Lists



Notes:
1. Basemap provided by ArcGIS Online World Street Map.

Figure 1
Site Location Map
Old American Zinc Plant Superfund Site
Fairmont City, Illinois



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Illinois-Iowa Ecological Services Field Office
Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022
Phone: (309) 757-5800 Fax: (309) 757-5807

In Reply Refer To:

September 12, 2018

Consultation Code: 03E18000-2018-SLI-1788

Event Code: 03E18000-2018-E-03998

Project Name: OAZ Plant Superfund Site Surrounding Properties and Facility Area Remedial Design

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website <http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. This website contains step-by-step instructions which will help you

determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all wind energy projects and projects that include installing towers that use guy wires or are over 200 feet in height, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.) and Migratory Bird Treaty Act (16 U.S.C. 703 et seq), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at <http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html> to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Illinois-Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office

1511 47th Ave

Moline, IL 61265-7022

(309) 757-5800

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

(618) 997-3344

Project Summary

Consultation Code: 03E18000-2018-SLI-1788

Event Code: 03E18000-2018-E-03998

Project Name: OAZ Plant Superfund Site Surrounding Properties and Facility Area Remedial Design

Project Type: Superfund Site Remediation

Project Description: Selected remedy for Surrounding Properties includes excavation of surface soils contaminated with arsenic, cadmium, lead and/or zinc at approximately 75 residential properties and 10 alleyways in the area. Additional properties and alleyways will be planned pending analytical results. Vegetation clearing will be required to address contamination in soils. Selected remedy for the Facility Area (FA) involves removal of vitrified slag, redistributed ground slag, affected soils, and sediments from drainage ditches and Rose Creek within the FA, placing of FA and Surrounding Areas materials within a 35-acre consolidation area located in the SW portion of the FA, and design of a storm water management system.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.65079517644201N90.09332892233155W>



Counties: Madison, IL | St. Clair, IL

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

| NAME | STATUS |
|--|------------|
| Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 | Endangered |
| Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

Birds

| NAME | STATUS |
|---|------------|
| Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505 | Endangered |

Fishes

| NAME | STATUS |
|---|------------|
| Pallid Sturgeon <i>Scaphirhynchus albus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162 | Endangered |

Crustaceans

| NAME | STATUS |
|---|------------|
| Illinois Cave Amphipod <i>Gammarus acherondytes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8412 | Endangered |

Flowering Plants

| NAME | STATUS |
|--|------------|
| Decurrent False Aster <i>Boltonia decurrens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7705 | Threatened |
| Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/601 | Threatened |

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birds and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON |
|---|------------------------|
| American Bittern <i>Botaurus lentiginosus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6582 | Breeds Apr 1 to Aug 31 |
| American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |

| NAME | BREEDING SEASON |
|---|-------------------------|
| Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626 | Breeds Oct 15 to Aug 31 |
| Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 20 to Jul 31 |
| Buff-breasted Sandpiper <i>Calidris subruficollis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488 | Breeds elsewhere |
| Dunlin <i>Calidris alpina arctica</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 1 to Aug 20 |
| King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936 | Breeds May 1 to Sep 5 |
| Least Bittern <i>Ixobrychus exilis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6175 | Breeds Aug 16 to Oct 31 |
| Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679 | Breeds elsewhere |
| Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 1 to Jul 31 |
| Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Sep 10 |

| NAME | BREEDING SEASON |
|---|------------------|
| Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Semipalmated Sandpiper <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12

(0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

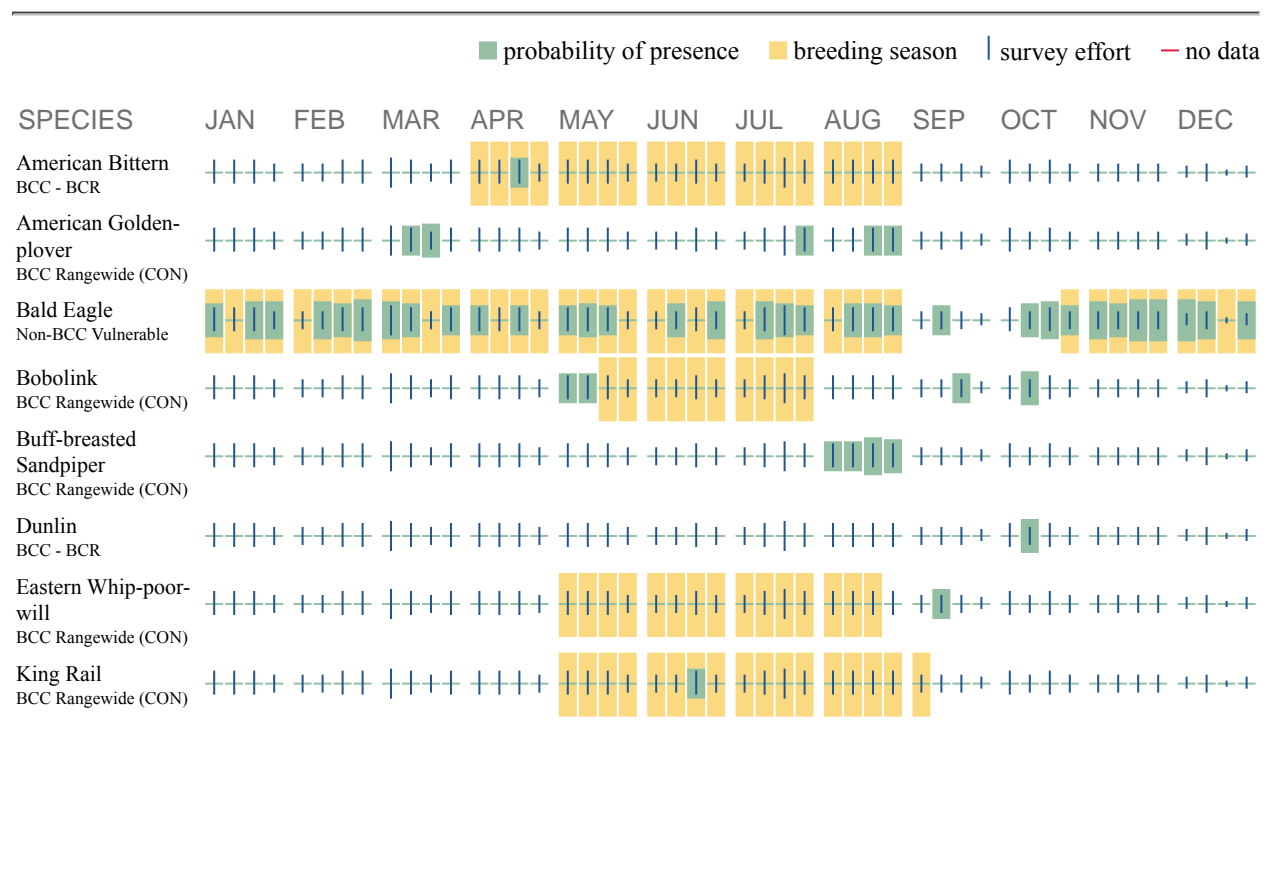
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



| SPECIES | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Least Bittern BCC - BCR | ++++ | ++++ | ++++ | ++++ | ++■+ | ++++ | ++■+ | ■+ | ■ | ■ | ++++ | ++++ |
| Lesser Yellowlegs BCC Rangewide (CON) | ++++ | ++++ | ++++ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ++++ | ++++ |
| Prothonotary Warbler BCC Rangewide (CON) | ++++ | ++++ | ++++ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ++++ | ++++ |
| Red-headed Woodpecker BCC Rangewide (CON) | ++■+ | ■ | ++++ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ++++ | ++++ |
| Ruddy Turnstone BCC - BCR | ++++ | ++++ | ++++ | ++++ | ■ | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ |
| Rusty Blackbird BCC Rangewide (CON) | ++++ | ++++ | ■ | ■ | ■ | ■ | ++++ | ++++ | ++++ | ++++ | ■ | ■ |
| Semipalmated Sandpiper BCC Rangewide (CON) | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ | ■ | ■ | ■ | ++++ | ++++ |
| Short-billed Dowitcher BCC Rangewide (CON) | ++++ | ++++ | ++++ | ++++ | ■ | ++++ | ■ | ■ | ++++ | ++++ | ++++ | ++++ |

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
 2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
-

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- [PEM1Ax](#)
- [PEM1C](#)
- [PEM1Cd](#)
- [PEM1Cx](#)
- [PEM1Fx](#)

FRESHWATER POND

- [PUBFx](#)
- [PUBGx](#)

RIVERINE

- [R4SBCx](#)
-



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

Phone: (618) 997-3344 Fax: (618) 997-8961

<http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html>

In Reply Refer To:

September 12, 2018

Consultation Code: 03E18100-2018-SLI-0697

Event Code: 03E18100-2018-E-01706

Project Name: OAZ Plant Superfund Site Surrounding Properties and Facility Area Remedial Design

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website <http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. This website contains step-by-step instructions which will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all wind energy projects and projects that include installing towers that use guy wires or are over 200 feet in height, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website <http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html> to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

(618) 997-3344

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Illinois-Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office

1511 47th Ave

Moline, IL 61265-7022

(309) 757-5800

Project Summary

Consultation Code: 03E18100-2018-SLI-0697

Event Code: 03E18100-2018-E-01706

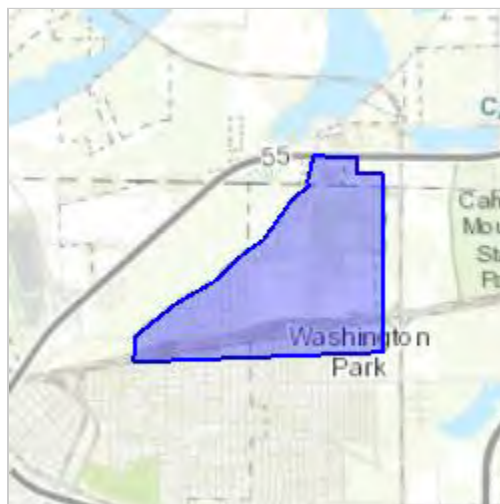
Project Name: OAZ Plant Superfund Site Surrounding Properties and Facility Area Remedial Design

Project Type: Superfund Site Remediation

Project Description: Selected remedy for Surrounding Properties includes excavation of surface soils contaminated with arsenic, cadmium, lead and/or zinc at approximately 75 residential properties and 10 alleyways in the area. Additional properties and alleyways will be planned pending analytical results. Vegetation clearing will be required to address contamination in soils. Selected remedy for the Facility Area (FA) involves removal of vitrified slag, redistributed ground slag, affected soils, and sediments from drainage ditches and Rose Creek within the FA, placing of FA and Surrounding Areas materials within a 35-acre consolidation area located in the SW portion of the FA, and design of a storm water management system.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.65079517644201N90.09332892233155W>



Counties: Madison, IL | St. Clair, IL

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

| NAME | STATUS |
|--|------------|
| Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 | Endangered |
| Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

Birds

| NAME | STATUS |
|---|------------|
| Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505 | Endangered |

Reptiles

| NAME | STATUS |
|---|------------|
| Eastern Massasauga (=rattlesnake) <i>Sistrurus catenatus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202 | Threatened |

Fishes

| NAME | STATUS |
|--|------------|
| Pallid Sturgeon <i>Scaphirhynchus albus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162 | Endangered |

Clams

| NAME | STATUS |
|---|------------|
| Spectaclecase (mussel) <i>Cumberlandia monodonta</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7867 | Endangered |

Crustaceans

| NAME | STATUS |
|--|------------|
| Illinois Cave Amphipod <i>Gammarus acherondytes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8412 | Endangered |

Flowering Plants

| NAME | STATUS |
|---|------------|
| Decurrent False Aster <i>Boltonia decurrens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7705 | Threatened |
| Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/601 | Threatened |

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Illinois-Iowa Ecological Services Field Office
Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022
Phone: (309) 757-5800 Fax: (309) 757-5807

In Reply Refer To:

September 06, 2018

Consultation Code: 03E18000-2018-SLI-1754

Event Code: 03E18000-2018-E-03924

Project Name: Old American Zinc Superfund Site Facility Area

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website <http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. This website contains step-by-step instructions which will help you

determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all wind energy projects and projects that include installing towers that use guy wires or are over 200 feet in height, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.) and Migratory Bird Treaty Act (16 U.S.C. 703 et seq), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at <http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html> to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Illinois-Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office

1511 47th Ave

Moline, IL 61265-7022

(309) 757-5800

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

(618) 997-3344

Project Summary

Consultation Code: 03E18000-2018-SLI-1754

Event Code: 03E18000-2018-E-03924

Project Name: Old American Zinc Superfund Site Facility Area

Project Type: Superfund Site Remediation

Project Description: The selected remedy for the FA involves removal of vitrified slag, redistributed ground slag, and affected soils and sediments within the FA, removal of source material (slag used as fill) and placing within a 35-acre consolidation area located in the SW portion of the FA. Consolidation area will be capped and covered with a 25-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. Environmental Covenant will be placed on the groundwater and soil as an institutional control.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.64773765457054N90.09792286222603W>



Counties: St. Clair, IL

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

| NAME | STATUS |
|--|------------|
| Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 | Endangered |
| Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

Birds

| NAME | STATUS |
|---|------------|
| Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505 | Endangered |

Fishes

| NAME | STATUS |
|---|------------|
| Pallid Sturgeon <i>Scaphirhynchus albus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162 | Endangered |

Crustaceans

| NAME | STATUS |
|---|------------|
| Illinois Cave Amphipod <i>Gammarus acherondytes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8412 | Endangered |

Flowering Plants

| NAME | STATUS |
|--|------------|
| Decurrent False Aster <i>Boltonia decurrens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7705 | Threatened |
| Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/601 | Threatened |

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birds and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON |
|---|------------------------|
| American Bittern <i>Botaurus lentiginosus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6582 | Breeds Apr 1 to Aug 31 |
| American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |

| NAME | BREEDING SEASON |
|---|-------------------------|
| Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626 | Breeds Oct 15 to Aug 31 |
| Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 20 to Jul 31 |
| Buff-breasted Sandpiper <i>Calidris subruficollis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488 | Breeds elsewhere |
| Dunlin <i>Calidris alpina arctica</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 1 to Aug 20 |
| King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936 | Breeds May 1 to Sep 5 |
| Least Bittern <i>Ixobrychus exilis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6175 | Breeds Aug 16 to Oct 31 |
| Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679 | Breeds elsewhere |
| Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 1 to Jul 31 |
| Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Sep 10 |

| NAME | BREEDING SEASON |
|---|------------------|
| Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Semipalmated Sandpiper <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12

(0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

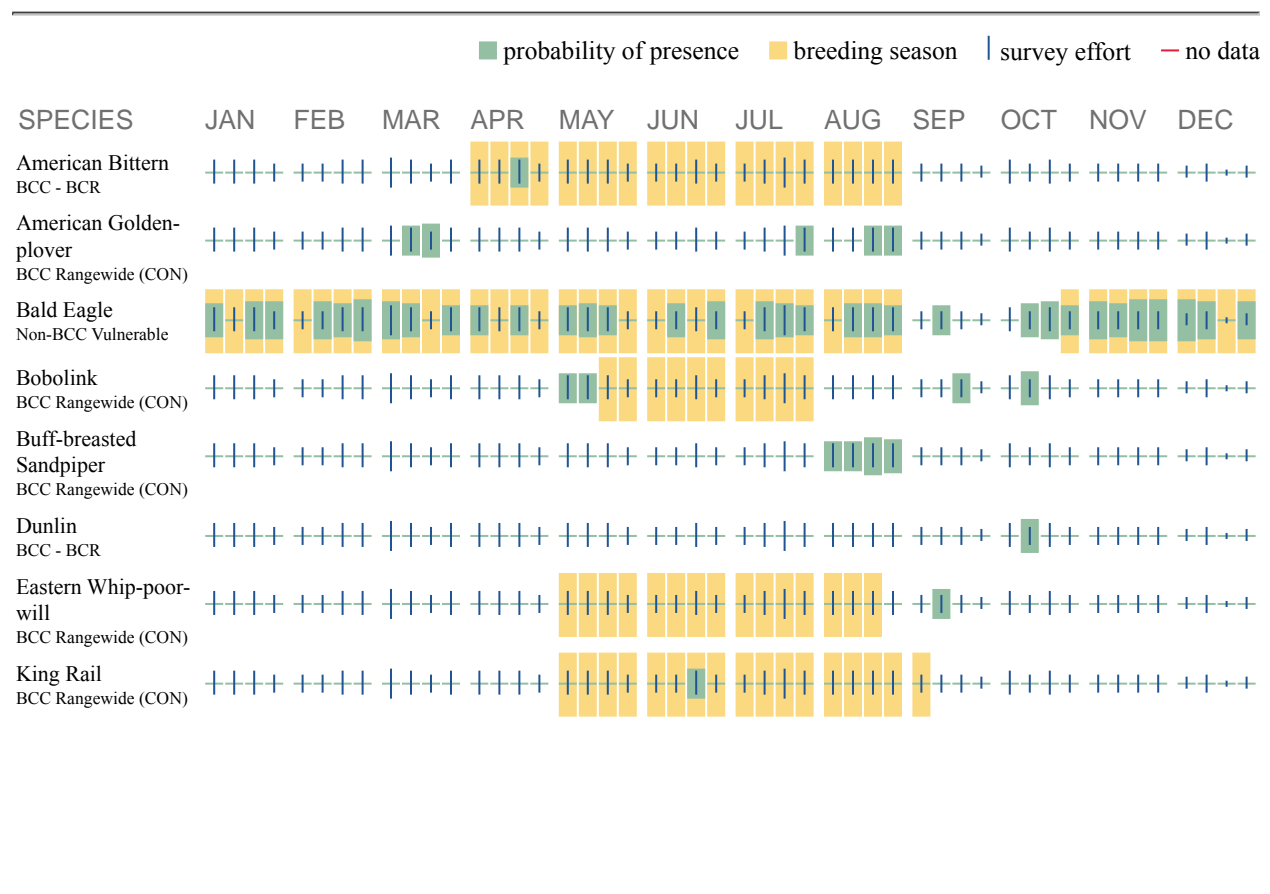
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



| SPECIES | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Least Bittern BCC - BCR | ++++ | ++++ | ++++ | ++++ | +++█ | ++++ | +++█ | +++█ | ++++ | ++++ | ++++ | ++++ |
| Lesser Yellowlegs BCC Rangewide (CON) | ++++ | ++++ | ++++ | +++█ | +++█ | ++++ | ++++ | +++█ | +++█ | +++█ | ++++ | ++++ |
| Prothonotary Warbler BCC Rangewide (CON) | ++++ | ++++ | ++++ | +++█ | +++█ | +++█ | +++█ | +++█ | +++█ | ++++ | ++++ | ++++ |
| Red-headed Woodpecker BCC Rangewide (CON) | +++█ | +++█ | ++++ | +++█ | +++█ | +++█ | +++█ | +++█ | +++█ | +++█ | +++█ | +++█ |
| Ruddy Turnstone BCC - BCR | ++++ | ++++ | ++++ | ++++ | +++█ | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ |
| Rusty Blackbird BCC Rangewide (CON) | ++++ | ++++ | +++█ | +++█ | +++█ | ++++ | ++++ | ++++ | ++++ | ++++ | +++█ | +++█ |
| Semipalmated Sandpiper BCC Rangewide (CON) | ++++ | ++++ | ++++ | ++++ | ++++ | ++++ | +++█ | +++█ | +++█ | ++++ | ++++ | ++++ |
| Short-billed Dowitcher BCC Rangewide (CON) | ++++ | ++++ | ++++ | ++++ | +++█ | ++++ | +++█ | +++█ | ++++ | ++++ | ++++ | ++++ |

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
 2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
-

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- [PEM1C](#)
-



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

Phone: (618) 997-3344 Fax: (618) 997-8961

<http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html>



In Reply Refer To:

September 06, 2018

Consultation Code: 03E18100-2018-SLI-0686

Event Code: 03E18100-2018-E-01668

Project Name: Old American Zinc Superfund Site Facility Area

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website

<http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. This website contains step-by-step instructions which will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all wind energy projects and projects that include installing towers that use guy wires or are over 200 feet in height, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website <http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html> to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Southern Illinois Sub-Office

Marion Illinois Sub-office

8588 Route 148

Marion, IL 62959-5822

(618) 997-3344

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Illinois-Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office

1511 47th Ave

Moline, IL 61265-7022

(309) 757-5800

Project Summary

Consultation Code: 03E18100-2018-SLI-0686

Event Code: 03E18100-2018-E-01668

Project Name: Old American Zinc Superfund Site Facility Area

Project Type: Superfund Site Remediation

Project Description: The selected remedy for the FA involves removal of vitrified slag, redistributed ground slag, and affected soils and sediments within the FA, removal of source material (slag used as fill) and placing within a 35-acre consolidation area located in the SW portion of the FA. Consolidation area will be capped and covered with a 25-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. Environmental Covenant will be placed on the groundwater and soil as an institutional control.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.64773765457054N90.09792286222603W>



Counties: St. Clair, IL

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

| NAME | STATUS |
|--|------------|
| Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 | Endangered |
| Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 | Threatened |

Birds

| NAME | STATUS |
|---|------------|
| Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505 | Endangered |

Fishes

| NAME | STATUS |
|---|------------|
| Pallid Sturgeon <i>Scaphirhynchus albus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162 | Endangered |

Crustaceans

| NAME | STATUS |
|---|------------|
| Illinois Cave Amphipod <i>Gammarus acherondytes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8412 | Endangered |

Flowering Plants

| NAME | STATUS |
|--|------------|
| Decurrent False Aster <i>Boltonia decurrens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7705 | Threatened |
| Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/601 | Threatened |

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Appendix F
Arsenic, Cadmium, Lead, and Zinc
Results for Properties to be
Remediated

Old American Zinc Plant Superfund Site

Notes:
 " - inches below ground surface
 " - No data for depth interval or sample section.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram
 FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

**Table F-2. Laboratory Analytical Results
for Vacant Properties Less Than 5,000
Square Feet**

Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | Cadmium (mg/kg) | | | | | | | | | | | |
|-----------------------|-------------|-----------------|--------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|-----------------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|
| | | Back | | | | Front | | | | Middle | | | | Back | | | | Front | | | | Middle | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 54TH ST | 454 | 7.1 | 8.1 | 6.8 | 6.3 | 3.9 | 8.9 | 7.5 | 6.2 | 5.9 | 5.8 | 6.2 | 6.3 | 13.4 | 11.8 | 1.9 | 2 | 8.1 | 10.4 | 7.5 | 2.1 | 4.6 | 1.9 | 1.7 | 1.8 |
| NORTH 54TH ST, FD | 454 | - | - | - | 7.5 | - | - | - | - | - | - | - | - | - | - | - | 2.6 | - | - | - | - | - | - | - | - |
| NORTH 58TH ST | 494 | 6.6 | 5.8 | 5.3 | 6.2 | 10.4 | 6.7 | 6.6 | 5.9 | 10.4 | 8.1 | 7.2 | 5.8 | 14.2 | 2.6 | 0.95 | 1.4 | 16.4 | 2.7 | 2.2 | 1.5 | 17 | 9.3 | 2.9 | 1.7 |
| NORTH 58TH ST, FD | 494 | 8.2 | - | - | - | - | - | - | - | - | - | - | - | 12.5 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 31ST ST | 762 | 31.5 J | 12.4 J | 8.1 J | 7 J | 10.7 | 9.8 | 11.1 | 7.1 | 11 | 9.6 | 9.1 | 8 | 6.7 | 3.8 | 2.3 | 0.65 | 7.2 | 5.5 | 4.4 | 1.3 | 4 | 2.1 | 3.2 | 1.3 |
| NORTH 31ST ST, FD | 762 | 18.1 | - | - | - | 11.2 | - | - | - | - | - | - | - | 5.4 | - | - | - | 7.6 | - | - | - | - | - | - | - |
| NORTH 36TH ST | 575 | 8.1 | 8.4 J | 4.9 | 4 | 5.1 | 5.9 | 5.2 | 4 | 4.3 | 5 | 6.3 J | 4.7 | 11.5 | 6.2 | 4 | 2.3 | 3.8 | 6.9 | 1.7 | 1.8 | 3.2 | 2.2 | 2.7 | 2 |
| NORTH 36TH ST, FD | 575 | - | 7.8 | - | - | - | - | - | - | - | - | - | - | - | 5.8 | - | - | - | - | - | - | - | - | - | - |
| NORTH 34TH ST | 581 | 7.1 J | 11.8 J | 9.5 | 7.4 | 6.3 J | 5.2 J | 6.2 J | 6 J | 7.4 J | 11.6 J | 8.8 J | 6.1 J | 4.2 J | 7.8 | 3.4 | 2.1 | 3.4 | 1.5 | 2 J | 0.99 | 6 | 5.2 | 3.7 | 1.3 |
| NORTH 34TH ST, FD | 581 | 6.1 J | - | - | - | - | - | - | - | - | - | - | - | 2.5 J | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 32ND ST | 582 | 6.4 | 5.6 | 7.2 | 4.8 | 6.9 | 18.5 | 17.4 | 10.6 | 7.2 | 9.1 | 6.4 | 6.4 | 3 | 3.2 | 4.5 | 2.7 | 3 | 4.9 | 3.2 | 3.3 | 4.4 | 7.1 | 5.1 | 2.7 |
| NORTH 32ND ST, FD | 582 | - | - | - | - | - | - | - | - | 6.6 | - | - | - | - | - | - | - | - | - | - | - | 4.6 | - | - | - |
| NORTH 32ND ST | 584 | 6.6 | 6.1 | 5.6 | 5.7 | 7 | 7 | 5.7 | 6.1 | 6.4 | 7.4 | 5.7 | 5.2 | 3 | 3 | 2.5 | 1.8 | 4.6 | 3.9 | 2.6 | 6.6 | 4.5 | 6.2 | 3.6 | 2.1 |
| NORTH 32ND ST, FD | 584 | - | - | - | - | - | - | - | - | 7.1 | - | - | - | - | - | - | - | - | - | - | - | 4.1 | - | - | - |
| KINGS HIGHWAY | 791 | 5.7 | 10.4 | 6.8 | 5.7 | 6.9 | 8.6 | 8.9 | 6.2 | 8.2 | 10.9 | 10 | 6.2 | 9.4 | 30.6 | 19.9 | 3.5 | 9.2 | 19.2 | 15.9 | 6.6 | 11.5 | 17.8 | 18.7 | 5.1 |
| KINGS HIGHWAY, FD | 791 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.6 |
| NORTH 40TH ST | 595 | 5.8 | 6.6 | 7.2 | 7.9 | 6.9 | 8.6 | 6.1 | 5.2 | 5.9 | 7.5 | 6.9 J | 6.2 | 3.1 | 6.1 | 5.1 | 2.7 | 10.1 | 23.5 | 5.7 | 0.97 | 3.1 | 4.1 | 4.4 | 3 |
| NORTH 40TH ST, FD | 595 | - | - | - | - | - | 11.8 | - | - | - | 6.9 | - | - | - | - | - | - | - | 34.4 | - | - | - | 4.9 | - | - |
| NORTH 40TH ST | 159 | 7.2 | 9.2 | 6.8 | 6.5 | 6.3 | 7.5 | 6.9 | 6.2 | 5.6 | 8.5 | 6.4 | 6.6 | 7.3 | 8.4 | 7.8 | 1.4 | 5 | 6.5 J | 13.1 | 1.7 | 4.7 J | 9.3 | 8.5 | 5.9 |
| NORTH 40TH ST, FD | 159 | - | - | - | - | 6.8 | 6.9 | - | - | - | - | - | - | - | - | - | - | 5.4 | 9.4 J | - | - | - | - | - | - |
| NORTH 62ND ST | 213 | 5 | 6.1 | 7.4 | 6.3 | 4.6 | 5.5 | 8 | 5.8 | 5.5 | 5.4 | 5.3 | 4.9 | 4.1 | 4.3 | 4.8 | 4 | 2.5 | 2.7 | 6.9 | 3.3 | 2.8 | 2.8 | 2.6 | 2.9 |
| NORTH 62ND ST, FD | 213 | - | 7 | - | - | - | - | - | - | 5.4 | - | - | - | - | 5.4 | - | - | - | - | - | - | 2.7 | - | - | - |
| NORTH 61ST ST | 271 | 4.7 | 5.5 | 5.7 | 6.1 | 6 | 6.1 | 5.2 | 6 | 5.2 | 5.4 | 5.9 | 5.2 | 4.5 | 4.5 | 3.3 | 1.4 | 5.9 | 5.2 J | 3 | 0.91 | 3.9 | 3.5 | 3.9 | 3.3 |
| NORTH 61ST ST, FD | 273 | 6.1 J | 5.8 J | 5.7 J | 5.5 J | 5.8 | 5.4 | 4.5 | 4.9 | 6.6 J | 6.5 J | 6 J | 5.9 J | 3.7 | 4.1 | 4.3 | 3.2 | 5.6 J | 5 | 4.5 | 0.96 | 4.9 | 4.5 | 4.2 | 3.1 |
| NORTH 61ST ST, FD | 273 | - | - | - | - | - | - | - | - | - | 6.8 J | - | - | - | - | - | - | - | - | - | - | 3.9 | - | - | - |
| KINDER AVE | 403 | 8.2 | 11.6 | 11.7 | 8.9 | 8.5 | 11.2 | 7.6 | 6.9 | 9.7 | 10.5 | 7.7 | 7.7 | 2.3 J | 13.2 | 14.2 | 4.6 | 11.1 | 12.5 | 5.4 | 2.4 | 6.1 | 5.8 | 5.5 | 3.5 |
| KINDER AVE, FD | 403 | 10.5 | - | - | - | - | 10.2 | - | - | - | - | - | - | 13.2 J | - | - | - | - | 9.7 | - | - | - | - | - | - |
| NORTH 38TH ST | 699 | 5.4 | 5.9 | 5.8 | 5.5 | 5.8 | 6.3 | 5.2 | 5.7 | 6.4 | 6.7 | 5.5 | 5.6 | 6.6 | 6 | 2.1 | 2 | 6.7 | 10 | 1.8 | 2 | 8.4 | 7.1 | 2.7 | 1.5 |
| THOMAS AVE_ID_787 | 787 | 10 | 12.9 | 9.4 | 7.2 | 8.3 | 11.4 | 8.2 | 7 | 7.7 | 11.9 | 8.7 | 9.8 | 9.3 | 9.3 | 5.7 | 1.1 | 10 | 11 | 2.6 | 0.67 U | 8.5 | 12.9 | 5.5 | 1.6 |
| THOMAS AVE_ID_787, FD | 787 | - | - | - | - | 7.9 | - | - | - | - | - | - | - | - | - | - | - | 10.3 | - | - | - | - | - | - | - |
| THOMAS AVE_ID_904 | 904 | 8.5 | 9.3 | 8.6 | 8.4 | 6.5 | 10.2 | 17.1 | 20.1 | 6.9 | 7.5 | 9 | 13.4 | 8.1 | 7.5 | 9.2 | 15.5 | 24.6 | 39.6 | 27.4 | 17.6 | 4.4 | 6.7 | 10.5 | 13 |
| THOMAS AVE_ID_904, FD | 904 | - | - | 9.3 | - | - | - | - | - | - | - | - | - | - | - | 8.8 | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

^ - No data for depth interval or sample section.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
mg/kg - milligrams per kilogram
FD - field duplicate
Result equal to or exceeding the cleanup level is shaded.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

**Table F-2. Laboratory Analytical Results
for Vacant Properties Less Than 5,000
Square Feet**

Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | Zinc (mg/kg) | | | | | | | | | | | |
|-------------------------|-------------|--------------|-------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------------|-------|--------|--------|----------|-------|--------|--------|-------|-------|--------|--------|
| | | Back | | | | | | Front | | | | | | Back | | | | | | Front | | | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 54TH ST | 454 | 186 | 150 | 18.3 | 19.7 | 322 | 114 | 106 | 24.5 | 129 | 35.7 | 16.7 | 15 | 768 | 495 | 95.9 | 90.3 J | 608 | 550 | 435 | 200 | 319 | 113 | 74.9 | 73.5 |
| NORTH 54TH ST, FD | 454 | - | - | - | 31.1 | - | - | - | - | - | - | - | - | - | - | - | 165 J | - | - | - | - | - | - | - | - |
| NORTH 58TH ST | 494 | 295 | 39.5 | 26.8 | 18.2 | 307 | 32.3 | 15.9 | 13.2 | 308 | 60.8 | 30.1 | 14.6 | 1,320 | 228 | 121 | 230 | 10,000 J | 406 | 127 | 86.6 | 913 | 559 | 236 | 114 |
| NORTH 58TH ST, FD | 494 | 339 | - | - | - | - | - | - | - | - | - | - | - | 1,760 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 31ST ST | 762 | 263 J | 169 J | 47 J | 21.9 J | 227 | 176 | 178 | 47.9 | 250 | 89.4 | 131 | 60.8 | 713 J | 309 J | 208 J | 112 J | 1,390 | 780 | 804 | 268 | 449 | 206 | 319 | 188 |
| NORTH 31ST ST, FD | 762 | 254 | - | - | - | 279 | - | - | - | - | - | - | - | 549 | - | - | 1,650 | - | - | - | - | - | - | - | - |
| NORTH 36TH ST | 575 | 464 | 312 | 212 | 92.1 | 224 | 412 | 54.1 | 50.6 | 165 | 108 | 162 | 199 | 1,040 | 680 J | 449 | 285 | 280 | 636 | 249 | 229 | 298 | 279 | 406 | 333 |
| NORTH 36TH ST, FD | 575 | - | 364 | - | - | - | - | - | - | - | - | - | - | - | 709 | - | - | - | - | - | - | - | - | - | - |
| NORTH 34TH ST | 581 | 149 J | 323 J | 107 | 39.8 | 66.7 J | 37.6 J | 118 J | 32.2 J | 95.4 J | 426 J | 215 J | 71.9 J | 442 J | 696 | 293 | 257 | 588 J | 258 J | 411 | 166 | 828 | 1,110 | 963 | 312 |
| NORTH 34TH ST, FD | 581 | 95.5 J | - | - | - | - | - | - | - | - | - | - | - | 288 J | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 32ND ST | 582 | 125 | 229 | 199 | 72.6 | 223 | 249 | 164 | 163 | 196 | 317 | 130 | 41.9 | 245 | 343 | 356 | 230 | 411 | 1,190 | 844 | 621 | 406 J | 672 | 356 | 234 |
| NORTH 32ND ST, FD | 582 | - | - | - | - | - | - | - | - | 154 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 32ND ST | 584 | 108 | 179 | 186 | 19.6 | 257 | 234 | 201 | 113 | 126 | 140 | 70.4 | 25.3 | 208 | 208 | 166 J | 134 | 520 | 511 | 209 | 354 | 380 | 595 | 597 | 345 |
| NORTH 32ND ST, FD | 584 | - | - | - | - | - | - | - | - | 117 | - | - | - | - | - | - | - | - | - | - | - | 364 | - | - | - |
| KINGS HIGHWAY | 791 | 90.4 | 131 | 57.6 | 15.5 | 121 | 78.1 | 42.5 | 15.2 | 70.2 | 104 | 47.8 | 17.6 | 449 | 874 | 619 | 175 | 397 | 576 | 473 | 301 | 459 | 623 | 485 | 295 |
| KINGS HIGHWAY, FD | 791 | - | - | - | - | - | - | - | - | - | - | - | 15.7 | - | - | - | - | - | - | - | - | - | - | - | 267 |
| NORTH 40TH ST | 595 | 82.9 | 96.9 | 83.5 | 122 | 172 | 150 J | 68.4 | 55.4 | 96.7 | 161 | 119 | 198 | 516 | 636 | 824 | 849 | 1,310 | 1,260 | 493 | 296 | 424 | 689 | 721 | 505 |
| NORTH 40TH ST, FD | 595 | - | - | - | - | 262 J | - | - | - | - | 147 | - | - | - | - | - | - | 1,760 | - | - | - | - | 727 | - | - |
| NORTH 40TH ST | 159 | 136 | 141 | 59 | 19.7 | 76.5 | 76.8 | 104 | 18.4 | 97.3 | 98.2 | 66.1 | 47.3 | 629 | 619 | 599 | 185 | 402 | 423 | 639 | 324 | 462 | 648 | 565 | 514 |
| NORTH 40TH ST, FD | 159 | - | - | - | - | 87.6 | 88.2 | - | - | - | - | - | - | - | - | - | - | 457 | 478 | - | - | - | - | - | - |
| NORTH 62ND ST | 213 | 29.4 | 31.6 | 31.6 | 20.1 | 38.2 | 29.3 | 35.6 | 23.2 | 28.6 | 24.7 | 20.4 | 14.2 | 147 | 144 | 167 | 120 | 160 | 144 | 187 | 115 | 151 | 150 | 99.3 | 81.2 |
| NORTH 62ND ST, FD | 213 | - | 38.8 | - | - | - | - | - | - | 25.9 | - | - | - | - | 172 | - | - | - | - | - | - | 136 | - | - | - |
| NORTH 61ST ST | 271 | 64.9 | 52.2 | 40.6 | 25.1 | 66 | 50.4 J | 33.3 | 22.4 | 64.2 | 56.6 | 68.4 | 77.3 | 313 | 298 | 239 | 155 | 401 | 339 J | 247 | 141 | 295 | 257 | 279 | 250 |
| NORTH 61ST ST | 273 | 51.1 | 51.6 | 47 | 30.3 | 65.1 | 50.9 | 42.7 | 21 | 58.5 | 47.5 | 45 | 33.2 | 262 | 248 | 243 | 204 | 314 J | 315 | 287 | 143 | 314 | 282 | 244 | 189 |
| NORTH 61ST ST, FD | 273 | - | - | - | - | - | - | - | - | 44.7 | - | - | - | - | - | - | - | - | - | - | - | - | 258 | - | - |
| KINDER AVE | 403 | 48.6 J | 252 | 161 | 40 | 96 | 101 J | 19.2 | 18.8 | 217 | 137 J | 19.7 | 33.8 | 340 J | 871 | 1,190 | 360 | 607 | 612 | 380 | 197 | 526 | 445 | 384 | 435 |
| KINDER AVE, FD | 403 | 228 J | - | - | - | 52.5 J | - | - | - | - | - | - | - | 885 J | - | - | - | 452 | - | - | - | - | - | - | - |
| NORTH 38TH ST | 699 | 254 | 173 | 18.6 | 23.3 | 67.1 | 134 | 17.6 | 19.2 | 120 | 86.9 | 19 | 16.4 | 567 | 365 | 96.7 | 92.9 | 328 | 578 | 155 | 130 | 380 | 297 | 193 | 75.9 |
| THOMAS AVE, ID, 787 | 787 | 151 | 62.4 | 33.7 | 16.9 | 96.4 J | 47.2 | 26.2 | 21.4 J | 119 | 97.7 | 35.9 | 27 | 556 | 524 | 427 | 290 | 518 | 509 | 325 | 129 | 458 | 596 | 475 | 316 |
| THOMAS AVE, ID, 787, FD | 787 | - | - | - | - | 83.8 | - | - | - | - | - | - | - | - | - | - | - | 541 | - | - | - | - | - | - | - |
| THOMAS AVE, ID, 904 | 904 | 87.4 | 61.3 | 37.6 | 24.3 | 149 | 364 | 131 | 46.8 | 33.1 | 47.2 | 91.6 | 36.6 | 343 | 278 | 307 | 361 | 959 | 1,360 | 674 | 420 | 196 | 462 | 422 | 307 |
| THOMAS AVE, ID, 904, FD | 904 | - | - | 20.5 | - | - | - | - | - | - | - | - | - | - | - | 263 | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

^ - No data for depth interval or sample section.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
mg/kg - milligrams per kilogram
FD - field duplicate

Result equal to or exceeding the cleanup level is shaded.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|-----------------|-------|--------|--------|--------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 58TH ST | 440 | 6.3 | 6.7 | 7.4 | 6.4 | 6 | 6.9 | 7.3 | 6.3 | 7.9 | 10.3 | 7.5 | 6.5 | 3.9 | 5.4 | 6.6 | 5.9 |
| NORTH 58TH ST, FD | 440 | - | - | - | - | 5.6 | - | - | - | - | 10.9 | - | - | - | - | - | - |
| NORTH 59TH ST | 005 | 7.9 | 6.6 | 6.7 | 6.7 | 7.1 | 8.3 | 6.7 | 6.4 | 8.4 | 7.9 | 5.5 | 7.3 | 7.8 | 7.2 | 7.1 | - |
| NORTH 59TH ST, FD | 005 | - | - | - | - | - | - | - | 8.3 | - | - | - | - | - | - | 6 | - |
| NORTH 57TH ST | 046 | 6.1 | 8.6 | 9.6 | 5.5 | 7.4 | 6.4 | 6.3 | 5.7 | 6.5 | 7.7 | 6.2 | 5.9 | 8.2 | 7.2 | 5.7 | 6.1 |
| NORTH 57TH ST, FD | 046 | - | - | - | - | 7.5 | - | - | - | 6.4 | - | - | - | - | - | - | - |
| NORTH 31ST ST | 062 | 9 | 9.8 | 8.3 | 7.4 | 10.9 | 10.3 | 8.5 | 7.3 | 11.7 | 9.4 | 13.2 J | 9 | 11.7 | 10.3 | 8.3 | 7.6 |
| NORTH 31ST ST, FD | 062 | - | - | - | - | 9.3 | - | - | - | - | - | - | - | 12.4 | - | - | - |
| NORTH 36TH ST | 063 | 20.7 | 22.8 | 19.5 | 7.2 | 16.4 | 14.6 | 9.9 | 10 | 9.3 J | 8.5 | 8.7 | 7.2 | 6.6 | 7.8 | 8.6 | 8.7 |
| NORTH 36TH ST, FD | 063 | - | - | - | - | - | - | - | - | 7.6 | - | - | - | - | - | - | - |
| NORTH 38TH ST | 869 | 5.5 | 5.1 | 5.8 | 4.8 | 5.5 | 5.1 | 5.8 | 4.8 | 5.2 | 6.1 | 5.1 | 4.9 | 8.1 | 6.9 | 6.5 | 5.9 |
| NORTH 38TH ST, FD | 869 | - | - | - | - | - | - | - | - | 5.5 | - | - | - | - | 8.3 | - | - |
| NORTH 32ND ST | 546 | 11.9 | 18 | 13.6 | 10 | 12.5 | 15.7 | 10 | 8.6 | 6.1 | 8.3 | 9.5 | 9.5 | 24.5 J | 25.7 | 9.1 | 7.8 |
| NORTH 32ND ST, FD | 546 | 12.2 | - | - | - | - | - | - | - | - | - | - | - | 17.9 | - | - | - |
| NORTH 32ND ST | 067 | 8.3 | 8.2 | 12.6 | 10.5 | 8.7 | 8.4 | 8.8 | 8.7 | 6.9 | 7.1 | 8 | 8.3 | 8.3 | 7.9 | 8.1 | 7 |
| NORTH 32ND ST, FD | 067 | - | - | - | - | - | 12.5 | - | - | - | - | - | - | - | 8.6 | - | - |
| NORTH 45TH ST | 844 | 11.4 | 8.4 | 6.5 | 6.1 | 5.9 | 5.7 | 6.5 | 6.6 J | 6.2 | 6.9 | 6.4 | 6 | 15.2 | 18.9 | 6.5 | 5.7 |
| NORTH 45TH ST, FD | 844 | - | - | - | - | 6.1 | - | - | - | 7.9 | - | - | - | - | - | - | - |
| NORTH 31ST ST | 070 | 6.8 | 7.5 | 7 | 5.8 | 7.4 | 8.4 | 7.7 | 5.5 | 9 | 9.5 | 8.9 | 7.8 | 11.2 | 7.1 | 6.1 | 5.6 |
| NORTH 31ST ST, FD | 070 | - | - | - | - | - | - | - | - | 9.7 | - | - | - | - | - | - | - |
| NORTH 34TH ST | 071 | 8.1 | 7.6 | 7.2 J | 6 | 6.7 | 8.1 | 12.1 | 7.4 | 7.1 | 8.6 | 7.3 | 6 | 8.5 | 11.6 | 7.4 | 5.3 |
| NORTH 34TH ST, FD | 071 | - | - | 6.1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 076 | 7.6 | 9.4 | 6.8 | 7 | 7.4 | 8.7 | 7.1 | 6 | 8.4 | 8.4 | 7 | 6.1 | 8.4 | 9.4 | 7.5 | 6.8 |
| NORTH 38TH ST, FD | 076 | - | - | - | - | - | - | - | - | - | - | - | - | 9.2 | - | - | - |
| NORTH 32ND ST | 081 | 11.9 | 12.3 | 9.4 | 9.9 | 8.2 | 11.1 | 10.1 | 9.4 | 11.2 | 11.1 | 8.8 | 8.7 | 10.1 | 11.9 | 8.7 | 8.3 |
| NORTH 32ND ST, FD | 081 | - | - | - | - | - | - | - | - | 10.5 | - | - | - | - | - | - | - |
| NORTH 38TH ST | 085 | 8.3 | 8.4 | 8.6 | 7.7 | 7.5 | 7.9 | 8.8 | 7.7 | 8.7 | 7.9 | 7.9 | 8 | 8 | 8.4 | 7.9 | 7.2 |
| NORTH 38TH ST, FD | 085 | - | - | - | - | - | - | - | - | - | - | - | - | 7.4 | - | - | - |
| NORTH 32ND ST | 087 | 21.3 | 11.5 | 9 | 8.5 | 17.1 J | 11.8 | 9.4 | 9.7 | 11.7 | 12.9 | 12 | 7.8 | 13.1 | 12.3 | 9.4 | 14.3 |
| NORTH 32ND ST, FD | 087 | - | - | - | - | 27.2 J | - | - | - | - | - | - | - | 14.8 | - | - | - |
| NORTH 36TH ST | 563 | 12.6 | 18.5 | 6.9 | 5.8 J | 12 | 33.5 | 10.9 | 9.4 | 11.1 | 7.4 | 5.4 | 5.4 | 9.8 | 9.9 | 3.3 | 5.6 |
| NORTH 36TH ST, FD | 563 | - | - | - | 3.8 J | - | - | - | - | - | - | - | 5.3 | - | - | - | - |
| NORTH 36TH ST | 097 | 3.6 | 4.3 | 6.3 | 5.3 | 3.8 | 6.5 | 4.7 | 4.2 | 4.4 | 5.2 | 5.4 | 6.1 | 6.9 | 6.3 | 5.4 | 5.7 |
| NORTH 36TH ST, FD | 097 | - | - | 6.9 | - | - | - | - | - | - | 5.3 | - | - | - | - | - | - |
| NORTH 32ND ST | 098 | 13.6 J | 15.6 | 9.7 | 8.9 | 10 | 10.8 | 10.5 | 7.6 | 12 | 12.2 | 10.8 | 5.9 | 10.4 | 11 | 10.4 | 10.2 |
| NORTH 32ND ST, FD | 098 | 13 | - | - | - | - | - | - | - | - | 12.4 | - | - | - | - | - | - |
| NORTH 34TH ST | 099 | 6.7 | 6.8 | 6.5 | 6.4 | 5.7 | 8.3 | 7.3 | 7 | 7 | 8.2 | 7.5 | 6.1 | 6.4 | 6.5 | 6.9 | 5.6 |
| NORTH 34TH ST, FD | 099 | - | - | - | - | 6 | - | - | - | - | - | - | - | 6.6 | - | - | - |
| NORTH 31ST ST | 101 | 7.7 | 8.9 | 9 | 7.4 | 6.3 | 8.1 | 8.6 | 5.9 | 38.9 | 76.6 | 40.7 | 25.9 | 10.4 | 10.6 | 9.1 | - |
| NORTH 31ST ST, FD | 101 | - | - | - | - | 6.5 | - | - | - | - | 54.5 | - | - | - | - | - | - |
| NORTH 41ST ST | 843 | 6.6 | 7.5 | 7.2 | 7.1 | 8.4 | 9.1 | 11.7 | 8 | 8.4 | 8.7 | 10 | 8.5 | 8.7 | 11.5 | 11.7 | 9.7 |
| NORTH 41ST ST, FD | 843 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 7.5 | - |
| NORTH 34TH ST | 571 | 6 | 8.1 | 8 | 12.1 | 5.2 | 5.6 | 5.1 | 5 | 5.5 | 6.5 | 6 | 5.8 | 5.7 | 7.6 | 5.5 | 5.3 |
| NORTH 34TH ST, FD | 571 | 6 | - | - | - | - | - | 4.7 | - | 5.5 | - | - | - | 5.9 | - | - | - |
| NORTH 31ST ST | 106 | 6.6 | 8.7 | 8.1 | 8 | 7.8 | 8 | 9.1 | 8.9 | 8.5 | 9 | 8.1 | 7.2 | 7.9 | 9.6 | 7 | 5.3 |

Notes:
 " - inches below ground surface; "J" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|-----------------|-------|--------|--------|-------|--------|--------|--------|-------|-------|--------|--------|-------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 31ST ST, FD | 106 | - | - | - | - | 8.1 | - | - | - | - | - | 7.8 | - | - | - | - | - |
| NORTH 34TH ST | 574 | 6.4 | 7.5 | 23 | 9.7 | 8.7 | 7.9 | 6.9 | 6 | 5.5 | 6.8 | 5.9 | 5.3 | 7.9 | 4.9 | 4.9 | - |
| NORTH 34TH ST, FD | 574 | - | - | - | - | 7.3 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 116 | 5.1 | 5.2 | 4.5 | 7.1 | 8.1 | 6.3 | 5.9 | 6.4 | 7.2 | 5.5 | 6.3 | 6.5 | 6.2 | 6.5 | 9.9 | 12.6 |
| NORTH 38TH ST, FD | 116 | - | - | - | - | - | 10.2 | - | - | - | 8.9 | - | - | - | - | - | - |
| NORTH 36TH ST | 120 | 4.4 | 5.6 | 6.1 | 7.7 | 8 | 5.1 | 7.4 | 13.3 | 5.3 | 6 | 5.5 | 4.7 | 6 | 9 | 4.9 | 4.8 |
| NORTH 36TH ST, FD | 120 | - | - | 6.9 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 44TH ST | 820 | 7.2 | 8.5 | 9.4 | 11.3 | 7.5 | 8.2 | 10.5 | 8.6 | 6.9 | 10 | 12.6 | 19.3 | 7.5 | 9.8 | 22.9 | 10.8 |
| BELT AVE | 591 | 8.2 | 7.7 | 6.4 | 4.7 | 8.7 | 7.2 | 5.5 | 4.8 | 9.5 | 8.1 | 5.6 | 4.9 | 9.6 | 6.3 | 6.1 | 5 |
| BELT AVE, FD | 591 | 9 | - | - | - | - | - | 4.9 | - | - | - | - | - | - | - | - | - |
| NORTH 35TH ST | 135 | 14.3 | 11.5 | 10.2 | 8.8 | 8.3 | 9 | 8.8 | 7.8 | 9.6 | 13 | 11.2 | 8.8 | 8.4 | 11.7 J | 17.1 | 45.2 |
| NORTH 35TH ST, FD | 135 | - | - | - | - | - | - | - | - | - | - | 11.1 | - | 9.5 | - | - | - |
| NORTH 37TH ST | 138 | 6.9 | 8.2 | 9.8 | 11.4 | 8.3 | 8.3 | 13.2 | 7.6 | 38.6 | 20.4 | 44.2 | 25 | 14.3 | 35.5 | 21.2 J | 19.2 |
| NORTH 37TH ST, FD | 138 | - | - | - | - | - | - | - | - | - | - | - | - | 21.3 | 45.5 | - | - |
| NORTH 40TH ST | 852 | 7.6 | 8 | 9.1 | 7.8 | 6.9 | 10 | 8.5 | 7.5 | 8 | 10 | 8.9 | 7.5 | 7.7 | 8.3 | 7.5 | 7.6 |
| NORTH 40TH ST, FD | 852 | 7.4 | - | - | - | 9.7 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 152 | 7.4 | 8.4 | 7.9 | 7 | 5.5 | 6.5 | 7.2 | 7.6 | 6.3 | 7.9 | 7.2 | 7.2 | 6.9 | 8.4 | 8 | 6.4 |
| NORTH 38TH ST, FD | 152 | 7.3 | - | - | - | - | - | - | - | - | - | - | - | 7.6 | - | - | - |
| NORTH 39TH ST | 153 | 9.3 | 16.8 | 9.1 | 8.4 | 10.7 | 15 | 10 | 8.5 | 8 | 16.2 | 11.1 | 9.7 | 13.6 | 15.8 | 18 | 10.3 |
| NORTH 39TH ST, FD | 153 | - | - | - | - | - | 10.5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 39TH ST | 157 | 6 | 7.8 | 8.3 | 8 | 6.3 J | 5.7 | 8.1 | 7.8 | 7 | 8.1 | 8 | 6.3 | 7.7 | 9.2 | 7.1 | 6.6 |
| NORTH 39TH ST, FD | 157 | - | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 40TH ST | 911 | 10.4 | 8.5 | 7.7 | 7 | 9.3 | 8.9 | 7.1 | 6.8 | 7.1 | 8.5 | 8.6 | 7.3 | 6.5 | 11.7 | 14 | 9.7 |
| NORTH 40TH ST, FD | 911 | - | - | - | - | - | - | - | - | - | - | - | - | 7.1 | - | - | - |
| NORTH 44TH ST | 817 | 33.5 | 11.9 | 6.7 | 4.8 | 10.7 | 10.8 J | 6.6 | 4.9 | 15.3 | 9.3 | 6.8 | 5 | 14.8 | 10.2 | 5.8 | 5.3 |
| NORTH 44TH ST, FD | 817 | - | - | - | - | 9.5 | - | - | - | - | 9.1 | - | - | - | - | - | - |
| NORTH 62ND ST | 165 | 20.4 | 35.3 | 7.8 | 7.3 | 7.6 | 8.5 | 8.7 | 7.6 | 6.1 | 8 | 7.8 | 7.9 | 7.2 | 9 | 7.5 | 5.7 |
| NORTH 62ND ST, FD | 165 | - | - | - | 9.3 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 166 | 6.9 | 9.8 | 8.7 | 6.7 | 9.6 | 9.4 | 12 | 9 | 7 | 8.1 | 7.1 | 8.5 | 6.1 | 10.3 | 8.1 | 7.4 |
| NORTH 62ND ST, FD | 166 | - | 7.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7.7 |
| NORTH 62ND ST | 600 | 7.8 | 8.4 | 8.6 | 6.1 | 8.1 | 9.2 | 6.8 | 6.8 | 7.7 | 9.4 | 7.2 | 6.8 | 8.1 | 10.7 | 8.9 | 7 |
| NORTH 62ND ST, FD | 600 | - | - | - | - | - | - | - | - | 7.4 | - | - | - | - | - | 9 | - |
| 2913 NORTH 61ST | 171 | 8.8 | 9.6 | 10 | 6 | 9.1 | 10.4 | 6.8 | 7.1 | 7.6 | 10.2 | 10.3 | 6.8 | 8.8 | 9.5 | 7.7 | 6.6 |
| 2913 NORTH 61ST, FD | 171 | - | 9.4 | - | - | - | - | - | - | - | - | - | - | - | 9.9 | - | - |
| NORTH 61ST ST | 174 | 3.1 | 7 | 6.3 | 6.6 | 6.5 | 6.9 | 7.2 | 8.2 | 5.7 | 6.5 | 7 | 7.5 | 6.9 | 7.5 | 9.1 | 8.4 |
| NORTH 61ST ST, FD | 174 | - | - | - | - | - | - | - | - | 5.9 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 176 | 4.8 | 6.1 | 6.1 | 6.7 | 7.5 | 6.3 | 5.8 | 6.5 | 5.4 | 8 | 7.8 | 9.2 | 5.9 | 8.1 | 7.7 | 6.9 |
| NORTH 61ST ST, FD | 176 | 4.9 | - | - | - | - | - | - | - | - | - | - | - | 4.7 | - | - | - |
| 2920 NORTH 61ST | 177 | 7.9 | 9.8 | 8.2 | 8.9 | 7.9 | 10.2 | 7.8 | 8.8 | 8.5 | 10.6 | 10.1 | 7.9 | 10 | 7.7 | 8.1 | 7.7 |
| NORTH 61ST ST | 180 | 7.5 | 7.5 J | 7 J | 7.1 J | 7.3 J | 6.8 J | 7.2 J | 6.6 J | 8.1 J | 7.3 J | 6.6 J | 6.5 J | 7.1 J | 6.3 J | 6.7 J | 9 J |
| NORTH 61ST ST, FD | 180 | - | - | - | - | - | 7.2 J | - | - | - | - | - | - | - | 6.4 J | - | - |
| NORTH 61ST ST | 181 | 7.5 | 7.8 | 7.9 | 7.6 | 8 | 6.7 | 7.4 | 7.4 | 6.6 | 7.1 | 7.2 | 7.2 | 5.9 | 6.8 | 8 | 7.5 |
| NORTH 61ST ST | 183 | 7.5 | 7.6 | 8.5 | 7.9 | 5.3 | 6.2 | 6.6 | 7.4 | 6.2 | 6.3 | 6.6 | 6.5 | 6.9 | 8.4 | 8.8 | 7.2 |
| NORTH 61ST ST | 184 | 4.6 | 5.7 | 6.2 | 6 | 3.4 | 6.8 | 5.4 | 5.6 | 5.3 | 4.3 | 4.8 | 5.6 | 5.1 | 5.1 | 5.7 | 5.6 |
| NORTH 61ST ST, FD | 184 | - | - | - | - | - | 5.2 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 186 | 7.7 | 8.4 | 8.7 | 7.8 | 9.5 | 9.1 | 8.3 | 8.9 | 9.1 | 10.6 | 10.2 | 9 | 8.7 | 9.6 | 8.2 | 9.7 |
| NORTH 60TH ST, FD | 186 | 7.9 | - | - | - | - | - | - | - | - | - | - | - | - | 9.3 | - | - |
| NORTH 61ST ST | 187 | 6.1 | 7.1 | 7.9 | 8.1 | 5.7 | 7.7 | 7.6 | 7.8 | 7 | 7.2 | 7.6 | 7.5 | - | - | - | - |
| NORTH 61ST ST, FD | 187 | - | - | - | - | - | - | - | 7.7 | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 188 | 8.1 J | 9 J | 8.5 J | 9.2 | 6.9 | 7 | 9.5 | 10.7 | 7.1 | 7.9 | 8.6 | 7.2 | 7 | 6.5 | 8.1 | 7.6 |

Notes:
 '-' - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|-----------------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 61ST ST, FD | 188 | - | - | - | - | - | - | - | - | 8.1 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 190 | 5.5 | 5.6 | 6.6 | 6.1 | 6.6 | 7.7 | 5.7 | 4.4 | 4.2 | 9.5 | 9.9 | 7 | 5.8 | 6.3 | 7.3 | 5.9 |
| NORTH 62ND ST, FD | 190 | - | - | - | - | - | - | - | - | 8.4 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 191 | 6.6 | 5.6 | 4.9 | 5.2 | 5 | 5.3 | 8.7 | 9.5 | 5.5 | 7.4 | 7.4 | 5.6 | 6.3 | 6.2 | 6.3 | 6 |
| NORTH 62ND ST, FD | 191 | - | - | - | - | - | - | - | - | - | 7.2 | - | - | - | 6.8 | - | - |
| NORTH 62ND ST | 192 | 4.9 | 5 | 5.1 | 6.7 | 4 | 4.4 | 5.8 | 6.8 | 4.1 | 4.4 | 5.9 | 6 | 5.6 | 5.7 | 5.1 | 5.7 |
| NORTH 62ND ST, FD | 192 | - | - | - | - | 4.5 | - | - | - | - | - | - | - | - | - | 6.5 | - |
| NORTH 63RD ST | 193 | 8.1 | 9 | 8.3 | 9 | 6.2 | 7.8 | 8.6 | 8.2 | 8.2 | 8.1 J | 7.8 | 8.7 | 8.1 | 9.5 | 9.1 | 8.4 |
| NORTH 63RD ST, FD | 193 | - | - | - | - | 7 | - | - | - | - | - | - | - | 7.6 | - | - | - |
| NORTH 62ND ST | 194 | 6.9 | 4.9 | 5.1 | 5.6 | 5.5 | 5.5 | 6.4 | 7.8 | 5.5 | 6.3 | 7.5 | 7.3 | 5.9 | 7.3 | 6.8 | 6 J |
| NORTH 62ND ST, FD | 194 | - | - | - | 4.6 | 5.6 | - | - | - | - | 7 | - | - | - | - | - | - |
| NORTH 62ND ST | 195 | 5.3 | 6.7 | 6.6 | 6.3 | 5.7 | 6.4 | 6.2 | 6.2 | 5.2 | 7.1 | 7.2 | 6.3 | 6 | 7 | 8 | 6.9 |
| NORTH 62ND ST, FD | 195 | - | - | - | - | - | - | - | - | - | 6.8 | - | - | - | - | - | - |
| NORTH 63RD ST | 196 | 4.9 | 4.6 | 4.7 | 5.3 | 5.3 | 3.8 | 5.4 | 8.5 | 5.4 | 6.9 | 7.7 | 9.4 | 6.4 | 7.9 | 7.7 | 7.9 |
| NORTH 63RD ST, FD | 196 | - | - | - | - | - | - | - | - | - | - | 8.1 | - | - | - | - | - |
| NORTH 62ND ST | 197 | 4.4 | 3.8 | 4.7 | 6.7 | 5.1 | 5.8 | 5.9 | 5.4 | 5 | 5.7 | 6.6 | 6 | 6.6 | 6.4 | 7.1 | 6.2 |
| NORTH 62ND ST, FD | 197 | - | 3.4 | - | - | - | - | - | - | - | - | - | - | - | 6.8 | - | - |
| NORTH 62ND ST | 199 | 4.5 | 5 | 4.6 | 8.4 | 5.2 | 4.7 | 10.6 | 10.4 | 6.2 | 5.3 | 8.6 | 9.8 | 4.1 | 4.9 J | 6.8 | 8.2 |
| NORTH 62ND ST, FD | 199 | 5 | - | - | - | - | - | - | 9.8 | - | - | - | - | - | 7.6 J | - | - |
| NORTH 62ND ST | 202 | 6 | 6.3 | 7.9 | 7.2 | 5.8 | 6 | 6.8 | 5.9 | 5.8 | 4.8 | 7.3 | 7.2 | 5.9 | 6.4 | 6.9 | 6.8 |
| NORTH 62ND ST, FD | 202 | - | 6.5 | - | - | - | - | - | - | 4.5 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 204 | 5.6 | 5 | 8.7 | 7.7 | 4.4 | 46.4 | 8.4 | 17.3 | 6.8 | 5.9 | 5 | 7.8 | 5.4 | 6.1 | 5.9 | 7.5 |
| NORTH 62ND ST, FD | 204 | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.7 | - | - |
| NORTH 63RD ST | 206 | 7.3 | 8.6 | 9 | 7.9 | 8.1 | 8.4 | 8.8 | 7.9 | 11.5 | 14.1 | 13.7 | 7.6 | 8 | 9.1 | 8.8 | 7.6 |
| NORTH 63RD ST, FD | 206 | - | 8.3 | - | - | - | - | - | - | - | - | - | - | - | 7.9 | - | - |
| NORTH 63RD ST | 207 | 7.6 | 8.5 | 7.9 | 8.8 | 7.6 J | 7 J | 7.3 J | 7.7 J | 6.4 J | 8.2 J | 8.8 J | 7.5 J | 7.6 | 8.4 J | 7 | 7.6 |
| NORTH 63RD ST, FD | 207 | - | 9 | - | - | - | - | - | - | - | - | 8.6 J | - | - | - | - | - |
| NORTH 62ND ST | 209 | 5.5 | 5.8 | 5.8 | 6.1 | 6.2 | 6.4 | 7.4 | 5.6 | 5.1 | 5.6 | 7.2 | 6.2 | 5.2 | 5.9 | 5.2 | 5.7 |
| NORTH 62ND ST, FD | 209 | 5.7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.7 |
| NORTH 62ND ST | 210 | 4.2 | 4.4 | 4.6 | 7.1 | 3.1 | 4.8 | 5.6 | 5.2 | 5.3 | 6.1 | 6.4 | 6.6 | 5.9 | 6.7 | 6.5 | 6.2 |
| NORTH 62ND ST, FD | 210 | - | - | - | - | 4.3 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 212 | 5.2 | 6.8 | 6.9 | 6.2 | 5.8 | 7.4 | 6 | 6.1 | 5.5 | 6.4 | 7.3 | 5 | 4.8 | 6.5 | 6 | 5 |
| NORTH 62ND ST, FD | 212 | - | - | - | - | 6.4 | - | - | - | - | - | - | - | - | - | 6.9 | - |
| NORTH 62ND ST | 215 | 4.9 | 4.9 | 7.5 | 8.8 | 2.9 | 5.7 | 6.2 | 7.7 | 4.1 | 8.5 | 7.9 | 6.7 | 6.2 | 2.6 | 5.6 | 6.7 |
| NORTH 62ND ST, FD | 215 | - | - | - | - | 3.6 | - | - | - | - | - | - | 8.2 | - | - | - | - |
| NORTH 63RD ST | 217 | 7.8 | 8.8 | 8.1 | 7.4 | 7.5 | 7.6 | 8.4 | 7.5 | 7.2 | 9.3 | 7.2 | 7.5 | 8 | 8.4 | 7.4 | 7.4 |
| NORTH 63RD ST, FD | 217 | - | - | - | - | 7.2 | - | - | - | - | - | - | - | - | 7.3 | - | - |
| NORTH 60TH ST | 222 | 8.5 | 9.4 | 9.4 | 9.7 | 6.1 | 7.9 | 8.8 | 9.8 | 6.1 | 7.9 | 9.1 | 9.1 | - | - | - | - |
| NORTH 60TH ST, FD | 222 | - | - | - | - | 7.8 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 224 | 7.9 | 9.1 | 8.5 | 7.9 | 7.8 | 9.5 | 9.1 | 9.3 | 7.6 | 8.9 | 8.5 | 7.7 | 7.7 | 9 | 8.5 | 8.2 |
| NORTH 61ST ST, FD | 224 | - | - | - | - | - | - | - | - | - | 8.8 | - | - | - | - | - | - |
| NORTH 62ND ST | 225 | 6 | 6.9 | 7.9 | 7.6 | 5.7 | 6.3 | 6.7 | 7.2 | 6.1 | 7.1 | 7.7 | 6.3 | 6.8 | 7.6 | 8.2 | 7.4 |
| NORTH 62ND ST, FD | 225 | 5.8 | - | - | - | 6.1 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 605 | 7.8 | 10.5 | 11 | 9.7 | 6 | 9.6 | 9.9 | 9 | 7.8 | 7.1 | 10.3 | 10.8 | 7.6 | 8.5 | 11.2 | 11.5 |
| NORTH 60TH ST, FD | 605 | - | - | - | - | 6.8 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 229 | 6.1 | 6.7 | 6.7 | 7.8 | 7 | 8.8 | 7.5 | 7.6 | 9.3 | 8.5 | 8.7 | 8.1 | 7.8 | 8.4 | 8.3 | 8.6 |
| NORTH 61ST ST, FD | 229 | - | 7.3 | - | - | 8.1 | - | - | - | - | - | - | - | 8 | - | - | - |
| NORTH 62ND ST | 232 | 5.6 | 8.9 | 8.9 | 8.7 | 5.8 | 6.4 | 7 | 7.7 | 5.7 | 5.4 | 6.3 | 5.5 | 5.5 | 6.1 | 6.4 | 6.6 |
| NORTH 62ND ST, FD | 232 | - | - | - | 10.7 | - | - | - | - | - | - | - | - | 5.4 | - | - | - |
| NORTH 63RD ST | 233 | 9 | 10 | 7.9 | 7.9 | 9 | 7.4 | 6.1 | 4.6 | 6.3 | 7.1 | 5.4 | 5.9 | 6.1 | 7.3 | 6.1 | 4.1 |

Notes:
 - - inches below ground surface; - - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|-----------------|-------|--------|--------|------|-------|--------|--------|--------|-------|--------|--------|-------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 63RD ST, FD | 233 | - | - | - | - | - | 7.2 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 234 | 8.2 | 10.7 | 11.1 | 9.6 | 11.3 | 12.3 | 9.4 | 9.2 | 11.8 | 13.3 | 11.2 | 9 | 11.8 | 12.7 | 9.1 | 9.4 |
| NORTH 60TH ST, FD | 234 | - | - | - | - | - | - | - | - | - | - | - | - | 10.7 | - | - | - |
| NORTH 60TH ST | 235 | 8 | 10 | 9.6 | 8.1 | 6.1 | 9.2 | 10.8 | 9 | 8.9 | 10.7 | 10.4 | 9 | 9.6 | 10.2 | 8.9 | 9 |
| NORTH 60TH ST, FD | 235 | - | - | - | - | - | 8.9 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 237 | 4.4 | 5.3 | 8.7 | 8.6 | 7.4 | 4.6 | 10 | 9.6 | 8.6 | 9.9 | 9.4 | 8.6 | 9.7 | 8.6 | 8.7 | 8.3 |
| NORTH 60TH ST, FD | 237 | - | - | 8.7 | - | - | - | - | - | - | - | - | - | 10 | - | - | - |
| N 61ST ST | 241 | 7.6 | 7.6 | 6.7 | 6.9 | 7.9 | 8.1 | 7.3 | 7.7 | 7.2 | 8.7 | 7.8 | 6.9 | 9.2 | 10.7 | 7.9 | 7.5 |
| N 61ST ST, FD | 241 | 7.3 | - | - | - | - | 7.8 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 243 | 7.9 | 8.3 | 7.2 | 8.2 | 7.1 | 6.9 | 8 | 7.6 J | 6.8 | 9.1 | 7.2 | 8.4 | 8.3 | 8.6 | 9.1 | 7.7 |
| NORTH 61ST ST, FD | 243 | 8 | - | - | - | - | - | - | - | - | 8.3 | - | - | - | - | - | - |
| NORTH 62ND ST | 246 | 6.4 | 7.3 | 7 | 8.5 | 9.5 | 10.1 | 8.8 | 8.6 | 8.3 | 10.5 | 9.2 | 8.5 | 8.7 | 8.7 | 8.4 | 7.5 |
| NORTH 62ND ST, FD | 246 | 6.5 | - | - | - | - | 10 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 252 | 7.3 | 7.9 | 9 | 7 | 6.9 | 8 | 8.6 | 6.5 | 6.7 | 8.4 | 9.4 | 5.6 | 7.5 | 8.9 | 8.4 | 7 |
| NORTH 61ST ST, FD | 252 | - | - | - | - | - | - | - | 6 | - | - | - | - | 7.7 | - | - | - |
| NORTH 61ST ST | 608 | 6.8 | 8.4 | 7 | 6 | 6.6 | 8.8 | 6.9 | 6.8 | 6.2 | 8.1 | 7.3 | 5.8 | 171 | 44.9 | 32.1 | 8.8 |
| NORTH 61ST ST, FD | 608 | 6.6 | - | - | - | - | - | - | - | 6.2 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 257 | 6.4 | 7.7 | 7.7 | 7.7 | 5.8 | 6.4 | 7.2 | 7.2 | 5.6 | 6 | 6.8 | 5.9 | 5.3 | 6.6 | 6 | 5.8 |
| NORTH 62ND ST, FD | 257 | - | - | - | - | 5.6 | - | - | - | - | - | - | - | 5.9 | - | - | - |
| NORTH 62ND ST | 259 | 5.1 | 5.9 | 6.7 | 6.5 | 5.9 | 5.7 | 6.1 | 6.1 | 5.8 | 4.9 | 5.7 | 6 | 5.1 | 6.2 J | 6.8 J | 6.6 J |
| NORTH 62ND ST, FD | 259 | - | - | - | - | - | - | - | - | 4.4 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 263 | 6.7 | 10.8 | 11.7 | 9.2 | 10.8 | 11.2 | 10.4 | 9.4 | 8.9 | 10.6 | 10.8 | 11.5 | 9.5 | 8.8 | 11.4 | 8 |
| NORTH 61ST ST, FD | 263 | - | - | - | - | 8.8 | - | - | - | - | - | - | - | 10.6 | - | - | - |
| NORTH 61ST ST | 266 | 7.1 | 6.9 | 7.1 | 7.1 | 6.7 | 6.6 | 6.6 | 6.8 | 7.7 | 6.8 | 6.7 | 7.6 | 9.5 | 7 | 6.2 | 8 |
| NORTH 61ST ST, FD | 266 | - | - | - | - | 6.9 | - | - | - | 7.4 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 268 | 7.7 | 8.2 | 7.7 | 7.5 | 6 | 9.2 | 10.2 | 9 | 7.7 | 11.1 | 9.4 | 8.6 | 8.5 | 9.9 | 8.9 | 8.3 |
| NORTH 61ST ST, FD | 268 | - | - | - | - | - | - | - | - | 9 | - | - | - | - | - | - | - |
| NORTH 63RD ST | 270 | 5.4 | 6.8 | 6.4 | 5.5 | 6.6 | 7.2 | 7.1 | 5.9 | 12.2 J | 6.4 | 6.7 | 6 | 7.3 | 6.9 | 7 | 7.1 |
| NORTH 63RD ST, FD | 270 | - | - | 6.5 | - | - | - | - | - | - | - | - | - | - | - | - | 7.5 |
| NORTH 61ST ST | 274 | 7 | 7.6 | 6.6 | 6.2 | 8.8 | 6.3 | 6.8 | 7.5 | 6.3 | 6.8 | 6.9 | 7 | 6.8 | 6.7 | 6.9 | 7.5 |
| NORTH 61ST ST, FD | 274 | - | - | - | - | 9.3 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 59TH ST | 276 | 7.6 | 12.2 | 8.3 | 6 | 10.5 | 12.5 | 7.9 | 6.2 | 7.8 | 9.4 | 7.3 | 7 | 6.3 | 7.8 | 7.1 | 5 |
| NORTH 59TH ST, FD | 276 | - | 11.4 | - | - | - | - | - | - | 7.6 | - | - | - | - | 7.3 | - | - |
| NORTH 61ST ST | 279 | 6.6 | 6.2 | 7.2 | 6 | 6.8 | 6.7 | 6.3 | 6.7 | 5.8 | 5.9 | 5.9 | 7.3 | 6.8 | 6.7 | 6.1 | 6.8 |
| NORTH 61ST ST, FD | 279 | - | 7 | - | - | - | - | - | - | - | - | - | - | - | 6 | - | - |
| NORTH 60TH ST | 290 | 4.7 | 7 | 5.9 | 5.9 | 4.8 | 5.4 | 6.3 | 7.7 | 4.5 | 5.7 | 6.6 | 5.8 | 5.6 | 5.9 | 6.4 | 5.4 |
| NORTH 60TH ST, FD | 290 | - | - | - | - | 5.3 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 292 | 7.7 | 7.8 | 10.1 | 10.9 | 8.2 | 9.5 | 9.6 | 9.9 | 7.7 | 9.6 | 9.5 | 7.4 | 8.4 | 8.7 | 7.8 | 6 |
| NORTH 60TH ST, FD | 292 | - | - | - | - | - | - | - | - | 7.9 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 297 | 5 | 6.2 | 5.7 | 5.5 | 3.4 | 11.6 | 7.8 | 8.2 | 4.9 | 4.2 | 5.2 | 7.7 | 6.2 | 6.7 | 7.5 | 7.5 |
| NORTH 62ND ST, FD | 297 | 4.6 | 6.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 299 | 4 J | 7.3 J | 6.1 J | 5.7 J | 6 J | 6.7 J | 6.5 J | 6.7 J | 7.3 J | 7.2 J | 6.4 | 6.7 | 6.6 | 6.6 | 6.9 | 6.9 |
| NORTH 62ND ST, FD | 299 | 4.2 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 766 | 9 | 11.3 | 8.8 | 12.1 | 10.4 | 12.8 | 9.7 | 9.8 | 8.4 | 9.2 | 8.4 | 8 | 9.4 J | 13.2 | 13.2 | 8.1 |
| MAPLE AVE, FD | 766 | 9.8 | - | - | - | - | - | - | - | - | - | - | - | 10.2 | - | - | - |
| MAPLE AVE | 767 | 10.1 | 14.7 | 19 | 8.9 | 7.3 | 31.8 | 13.8 | 14.8 | 9.1 | 9.4 | 19 | 9.4 | 11.9 | 17 | 19.3 | 16.7 |
| MAPLE AVE, FD | 767 | 9.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 309 | 6.6 | 7.4 | 7.3 | 6.5 | 7.2 | 7.1 | 5.9 | 5.9 | 7.3 | 12.5 | 5.6 | 6 | 7.7 | 6.2 | 6.1 | 6 |
| MAPLE AVE, FD | 309 | 6.5 | - | - | - | 8.9 | - | - | - | - | - | - | - | - | 6.1 | - | - |
| MAPLE AVE | 310 | 6.2 | 6.8 | 7.1 | 6.1 | 5 | 7 | 5.8 | 7.9 | 5 | 7.3 | 7.8 | 7.3 | 5.9 | 7.1 | 8.9 | 5.7 |

Notes:
 - - inches below ground surface; - - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|-----------------|--------|--------|--------|-------|---------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| MAPLE AVE, FD | 310 | - | - | - | - | - | - | - | - | 4.9 | - | - | - | - | - | - | - |
| MAPLE AVE | 618 | 5.1 | 6.2 | 5.6 | 5.3 | 8.6 | 13.9 | 6.2 | 5.5 | 9.1 | 10.2 | 5.5 | 6.1 | 8.2 | 14.3 | 5.8 | 4.7 |
| MAPLE AVE, FD | 618 | 5.7 | - | - | - | - | 10.1 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 312 | 3.5 | 6.7 | 5 | 5.5 | 4.7 | 5.9 | 6.1 | 5.1 | 3.7 | 4.6 | 5.9 | 5.1 | 6.4 | 12.3 | 8 | 5.9 |
| NORTH 62ND ST, FD | 312 | - | - | - | - | 4.9 | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 619 | 7.8 | 9.2 | 10.9 | 8.4 | 7.4 | 9.1 | 12.6 | 10.9 | 11 | 11.1 | 13 | 11.9 | 21 | 9.3 | 14.7 | 16.1 |
| MAPLE AVE, FD | 619 | - | - | - | - | - | - | - | - | - | - | - | 24 | 10.8 | - | - | - |
| MAPLE AVE | 317 | 9.3 | 12 | 10.7 | 8.6 | 11.2 | 16.9 | 10.3 | 10.6 | 9.9 | 11 | 9.2 | 7.7 | 41.8 | 17.1 | 10.7 | 17.2 |
| MAPLE AVE, FD | 317 | - | - | - | - | - | - | - | - | 6.8 | 10.1 | - | - | - | - | - | - |
| NORTH 62ND ST | 319 | 6.9 | 7.8 | 8.7 | 5.9 | 7.1 J | 6.6 | 6.9 | 6.8 | 5.8 | 6 | 5.7 | 5.5 | 5.6 | 6.2 | 5.5 | 5 |
| NORTH 62ND ST, FD | 319 | - | - | - | - | - | 6.4 | - | - | - | - | - | - | - | - | 5 | - |
| NORTH 62ND ST | 320 | 8.3 | 7.4 | 7.3 | 7.7 | 7 | 7.5 | 7.2 | 7.9 | 8.6 | 8.3 | 7.7 | 7.6 | 8 | 8.4 | 8.8 | 5.1 |
| NORTH 62ND ST, FD | 320 | 7.7 | - | - | - | - | - | - | - | - | - | - | - | 8.2 | - | - | - |
| MAPLE AVE | 323 | 8.5 | 9.1 | 7.6 | 6.5 | 7.9 | 7.3 | 7.3 | 6.7 | 5.7 | 7 | 7.1 | 6.2 | 12 | 9.3 | 10.7 | 7.9 |
| MAPLE AVE, FD | 323 | - | 9.1 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 324 | 12.1 | 8 | 23.6 | 14.2 | 8 J | 9.2 | 11.6 | 8.5 | 26.8 | 10.8 | 11.2 | 12.6 | 18 | 26.8 | 16.8 | 14.7 |
| MAPLE AVE, FD | 324 | - | - | 16.5 | 11.2 | - | 7.8 | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 325 | 7 | 7.8 | 8.5 | 13.7 | 6.3 | 8.2 | 7.2 | 10.2 | 6.6 | 7.1 | 8.6 | 8.3 | 6.5 | 7.9 | 14.1 | 13.3 |
| MAPLE AVE, FD | 325 | - | - | - | - | - | - | - | 7.9 | 6.1 | - | - | - | - | - | - | - |
| MAPLE AVE | 326 | 18.4 | 13.8 | 13.4 | 26.9 | 8.1 | 58.9 | 38.4 | 17.2 | 13 | 16.2 | 14.6 | 10.7 | 9.4 | 16 | 18.3 | 14.2 |
| MAPLE AVE, FD | 326 | - | - | - | - | - | 51.6 | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 859 | 6 | 7 | 7.5 | 22.2 | 5.3 | 6.2 | 4.9 | 13.3 | 4.3 | 4.8 | 5.2 | 4.8 | 6.1 | 10.4 | 12.3 | 10.6 |
| MAPLE AVE, FD | 859 | - | - | - | - | 5.9 | - | - | - | 5.7 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 329 | 5 | 5.1 | 5.7 | 6.1 | 5.3 | 5.6 | 9.4 | 16.7 | 5.1 | 5.7 | 75.9 | 8.8 | 6 | 6 | 7.2 | 8.1 J |
| COLLINSVILLE RD, FD | 329 | - | - | - | - | - | - | - | 12.8 | - | - | - | - | - | - | - | - |
| COOKSON RD | 330 | 12.6 J | 13.4 J | 8 J | 6.9 J | 6.6 J | 8.9 J | 6.8 J | 6.3 | 5.6 | 6.3 | 11.2 | 8.2 | 5.1 | 7.1 | 6.1 | 6 |
| COOKSON RD, FD | 330 | - | - | - | - | - | - | - | - | 5.4 | - | - | - | - | - | - | - |
| MAPLE AVE | 910 | 5.2 | 7.3 | 7.1 | 5.2 | 4.9 | 9 J | 9 J | 9.4 J | 4.1 J | 6 J | 7.4 J | 9.3 J | 22.5 J | 22.9 J | 13.5 J | 7.2 J |
| MAPLE AVE, FD | 910 | - | - | - | - | 5.3 | - | - | - | - | - | - | - | 21.8 J | - | - | - |
| COLLINSVILLE RD | 866 | 7 | 8.3 | 7.6 | 6.3 | 8.1 J | 9.9 | 8 | 7.3 | 7.8 | 8 | 9.5 | 6.9 | 7.9 | 8.1 | 7.5 | 7.9 |
| COLLINSVILLE RD, FD | 866 | - | - | - | - | - | - | - | 8 | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 909 | 9.2 | 8.2 | 7.5 | 7.2 | 7.1 | 7.8 | 6.7 | 7.4 | 7 | 7.8 | 6.8 | 6.8 | - | - | - | - |
| COLLINSVILLE RD, FD | 909 | - | - | - | - | - | - | - | - | 7.1 | - | - | - | - | - | - | - |
| LOCUST ST | 908 | 39.8 | 14.1 | 12.9 | 12.2 | 10.5 | 16.7 J+ | 12.2 | 9.7 | 9.4 | 11.5 | 8.9 | 7.5 | 11 | 12.9 | 10.1 | 8.8 |
| LOCUST ST, FD | 908 | - | - | - | - | - | 16 | - | - | - | - | - | - | 14 | - | - | - |
| COOKSON RD | 846 | 9.1 | 12.7 | 9 | 11.3 | 19.1 | 9.5 | 9.8 | 99 | 12.1 | 8.9 | 8.8 | 5.4 | 12 | 8.4 | 7.1 | 5.5 |
| COOKSON RD, FD | 846 | - | - | - | - | - | 9.2 | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 821 | 7.5 | 8.2 | 7.2 | 7.4 | 8.3 J | 8 | 8.1 | 8.1 | 13.9 | 11.6 | 9 | 7.7 | 5.4 | 6.9 | 8.4 | 7.6 |
| COOKSON RD, FD | 821 | - | - | - | - | 7.4 | - | - | - | - | - | - | - | - | 6.7 | - | - |
| COLLINSVILLE RD | 811 | 7.7 | 8.6 | 6.9 | 6.5 | 7.2 | 8.4 | 7.5 | 7.1 | 7.5 | 8.3 | 7.2 | 6.5 | 5.6 | 5.7 | 6.4 | 6.1 |
| COLLINSVILLE RD, FD | 811 | - | - | - | - | 7.5 | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 819 | 3.6 | 7.9 | 21.7 | 8.2 | 4.2 | 3.4 | 11 J | 8 | 4.5 | 4.4 | 22.3 | 358 | 7.1 | 13.3 | 11.6 | 7.3 |
| COOKSON RD, FD | 819 | - | - | - | - | - | 21.2 J | - | - | - | - | - | - | - | 16.3 | - | - |
| COOKSON RD | 812 | 5.7 | 7.9 | 8.7 | 10 | 6.1 | 6.8 | 10.2 | 7.3 | 6 | 9.1 | 10.2 | 7.4 | 5.7 | 6.7 | 12.1 | 7.7 |
| COOKSON RD, FD | 812 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7 | - | - |
| COLLINSVILLE RD | 825 | 6.6 | 5.7 | 5.6 | 6.2 | 9.9 | 11.3 | 12.2 | 5.8 | 7.6 | 8 | 8.2 | 10 | 6.4 | 6.9 | 14.5 | 44.5 |
| COLLINSVILLE RD | 845 | 15 | 8.7 | 6.2 | 4.6 | 15.1 | 7.8 | 5 | 4.2 | 20.4 | 7 | 4.8 | 4.5 | 13.4 | 7.5 | 5.2 | 5.3 |
| COLLINSVILLE RD, FD | 845 | - | - | - | - | 16.1 | - | - | - | - | - | - | - | - | 7.4 | - | - |
| DELMAR AVE | 352 | 10 | 10.6 | 7.9 | 6.8 | 11.6 | 12.6 | 12.9 | 7 | 10 | 11.1 | 12.1 | 7.8 | 11.8 | 12.9 | 11.5 | 5.8 |
| DELMAR AVE, FD | 352 | - | - | - | - | - | - | - | - | - | - | - | - | 12 | - | - | - |

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Arsenic (mg/kg) | | | | | | | | | | | | | | | |
|------------------------|-------------|-----------------|--------|--------|--------|------|-------|--------|--------|--------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| KINDER DR | 769 | 13.1 | 11.8 | 8.3 | 8.2 | 12.7 | 9.1 | 8 | 6.6 | 10.9 | 11.6 | 8.1 | 7.3 | 10.9 | 14.2 | 7.9 | 6.8 |
| KINDER DR, FD | 769 | - | - | - | - | - | 9 | - | - | - | - | - | - | - | - | - | - |
| THOMAS AVE | 827 | 9.6 | 8.7 | 6.9 | 6 | 10.5 | 10 | 6.5 | 6 | 6.8 | 9.1 | 7.1 | 5.8 | 8.3 | 9.5 | 5.4 | 6.5 |
| THOMAS AVE, FD | 827 | - | - | - | - | - | 8.8 | - | - | - | - | - | - | 8.1 | - | - | - |
| THOMAS AVE | 900 | 7.2 | 8.1 | 7.3 | 5.2 | 7.2 | 7.1 | 7.8 | 7.6 | 10 | 9.4 | 6.9 | 5.4 | 10.5 | 10.5 | 6.1 | 5.8 |
| THOMAS AVE, FD | 900 | - | - | - | - | 6.8 | - | 8 | - | - | - | - | - | 10 | - | - | - |
| KINDER DR | 367 | 10.3 | 14 | 8.6 | 8 | 10.2 | 12.8 | 9.7 | 7.5 | 7.7 | 9 | 6.6 | 5.4 | 9.8 | 11.4 | 11 | 6.8 |
| KINDER DR, FD | 367 | - | - | - | - | - | - | - | - | 8.4 | - | - | - | - | - | 7.6 | - |
| MARYLAND AVE | 653 | 9.8 | 6.6 | 6.1 | 6.4 | 8.4 | 10.9 | 6 | 6.4 | 5.2 | 17.4 | 9.8 | 6.8 | 2.4 | 6.1 | 8 | 8 |
| MARYLAND AVE, FD | 653 | 8.5 | - | - | - | - | 10.6 | - | - | - | - | - | - | - | - | - | - |
| KINDER DR | 378 | 6.8 | 7.3 | 11.9 | 13.8 | 7.1 | 6.8 | 12.1 | 11.7 | 6.8 | 11.1 | 13.8 | 14.1 | 9.1 | 6.6 | 9.2 | 12.2 |
| KINDER DR, FD | 378 | - | - | - | - | - | - | - | - | - | - | - | - | 6.8 | - | - | - |
| MARYLAND AVE | 384 | 4.5 | 5.2 | 7.9 | 6 | 5 | 5.6 | 3.7 | 6.4 | 7.9 | 7.8 | 22.3 | 9.5 | 5.3 | 5.1 | 7.3 | 7 |
| MARYLAND AVE, FD | 384 | - | - | - | - | - | - | - | - | 7.1 | - | - | - | - | 6 | - | - |
| COLLINSVILLE RD | 388 | 10 | 9.4 | 7 | 8.6 | 7.7 | 9 | 8.2 | 8.3 | 9.7 | 10.5 | 10.6 | 13.9 | 11.1 | 14.4 | 13.5 | 15.4 |
| COLLINSVILLE RD, FD | 388 | - | - | - | - | - | - | - | - | 9.8 | - | - | - | - | - | - | - |
| HILL AVE | 660 | 5.9 | 4.8 | 6.7 | 8.3 | 4.5 | 4.2 | 6.1 | 6.8 | 7.1 | 6.1 | 6.4 | 6.9 | 7.3 | 8.3 | 5.8 | 7.9 |
| HILL AVE, FD | 660 | - | - | - | - | 4.7 | - | - | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 389 | 7.1 | 8.1 | 7.8 | 9.7 | 8.6 | 10 | 9.4 | 9.5 | 6 | 7.4 | 9.6 | 8.7 | 7.2 | 7.5 | 10.7 | 14.8 |
| COLLINSVILLE RD, FD | 389 | - | - | - | - | - | - | - | - | 8 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 392 | 70.6 | 9.9 | 41.1 | 9.8 | 7.6 | 8.3 | 9.8 | 11.2 | 11.8 | 46.2 | 14.6 | 19.2 | 9.7 | 13.2 | 13.5 | 9.3 |
| COLLINSVILLE RD, FD | 392 | - | 20.6 J | - | - | - | - | - | - | - | 22.1 | - | - | - | - | - | - |
| COLLINSVILLE RD | 395 | 6.2 | 7 | 7.4 | 7 | 6.9 | 6.8 | 6.8 | 7 | 6.5 | 7.1 | 7.2 | 1.2 U | 6.3 | 6.8 | 6.6 | 6.9 |
| COLLINSVILLE RD, FD | 395 | - | - | - | - | - | 6.9 | - | - | - | - | - | - | 6.5 | - | - | - |
| COLLINSVILLE RD | 396 | 6.9 | 6.3 | 7.3 | 6.5 | 6.2 | 6.9 | 7.6 | 7.5 | 6.4 | 6.2 | 6.9 | 7.7 | 6.4 | 6.1 J | 6.8 | 6.4 |
| COLLINSVILLE RD, FD | 396 | - | - | - | - | - | - | - | - | - | - | - | - | - | 6.3 | - | - |
| COLLINSVILLE RD | 398 | 4.2 | 5.1 | 4.9 | 4.9 | 4.6 | 5.3 | 5.6 | 5 | 4.9 | 5 | 5.5 | 5 | 4.5 | 4.6 | 5.4 | 4.8 |
| COLLINSVILLE RD, FD | 398 | - | - | - | - | - | - | - | - | - | - | - | - | - | 4.6 | - | - |
| COLLINSVILLE RD | 662 | 5.5 | 5.9 | 6 | 7.4 | 5.2 | 5.1 | 6.3 | 5.9 | 6.5 | 7.7 | 6.1 | 7.3 | 6.4 | 7.5 J | 7.4 | 6.4 |
| COLLINSVILLE RD, FD | 662 | - | - | - | - | - | - | - | - | 6.7 | - | - | - | - | - | - | - |
| MARYLAND AVE | 777 | 7.5 | 13 | 13.2 | 9.8 | 10.2 | 12.3 | 11.6 | 9.3 | 11.1 J | 11.9 | 9.2 | 9.3 | 10.2 | 11.4 | 9.9 | 9 |
| MARYLAND AVE, FD | 777 | - | - | - | - | - | 12.2 | - | - | - | - | - | 9.5 | - | - | - | - |
| NICHOLS AVE_ID_745 | 745 | 14.3 | 9.7 | 7.7 | 8.2 | 15.3 | 12 | 7 | 6.4 | 14.9 | 11.6 | 8.4 | 7.9 | 23.6 | 14.1 | 8.7 | 8.9 |
| NICHOLS AVE_ID_745, FD | 745 | - | - | - | - | - | 10.8 | - | - | - | - | - | - | - | 12.1 | - | - |
| NICHOLS AVE_ID_746 | 746 | 10.9 | 8.2 | 5.8 | 4.9 | 8.9 | 7 | 5.5 | 5.5 | 9.7 | 8.7 | 6.3 | 5.4 | 9.4 | 7.7 | 6.9 | 5.9 |
| NICHOLS AVE_ID_746, FD | 746 | - | - | - | - | - | - | - | - | 7.5 | - | - | - | - | - | - | - |
| THOMAS AVE_ID_756 | 756 | 4.9 | 9.4 | 5.5 | 5.8 | 5.9 | 9.4 | 6 | 5 | 10.1 | 8.6 | 5.9 | 5.9 | 14.6 | 10.2 | 7.5 | 4.7 |
| THOMAS AVE_ID_756, FD | 756 | - | - | - | - | - | 8.2 | - | - | 9.5 | - | - | - | - | - | - | - |
| THOMAS ST | 413 | 6.6 | 7.6 | 5.2 | 4.6 | 10.3 | 10 | 5.5 | 5.6 | 10.4 | 9.2 | 5.8 | 5.6 | 10.5 | 11.3 | 6 | 7.5 |
| THOMAS ST, FD | 413 | - | - | - | - | - | - | - | - | 10.7 | - | - | - | 10.9 | - | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|------------------|-------------|-----------------|-------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| ORTH 58TH ST | 440 | 10.1 | 8.5 | 20 | 8.9 | 7.1 | 11.6 | 5.8 | 6.2 | 11.7 | 21.8 | 6.7 | 4.6 | 3.2 | 7.6 | 12 | 3.5 |
| ORTH 58TH ST, FD | 440 | - | - | - | - | 7.5 | - | - | - | - | 28.9 | - | - | - | - | - | - |
| ORTH 59TH ST | 005 | 23.6 | 23.7 | 9.6 | 1.1 | 12.8 | 18 | 2 | 2.3 | 10.9 J | 12.5 | 5.1 | 3.2 | 17.2 | 11.3 | 4.2 | 2.2 |
| ORTH 59TH ST, FD | 005 | - | - | - | - | - | - | - | 2.2 | - | - | - | - | - | - | - | 3.1 |
| ORTH 57TH ST | 046 | 13.9 | 6.9 | 6.1 | 1 | 13.4 | 14.6 | 11.4 | 2.5 | 16.9 | 29.4 | 7.6 | 6.3 | 18.6 | 16.3 | 4 | 13 |
| ORTH 57TH ST, FD | 046 | - | - | - | - | 11.7 | - | - | - | 14 | - | - | - | - | - | - | - |
| ORTH 31ST ST | 062 | 5.8 | 4.9 | 2.5 | 1.3 | 7.8 | 4.2 | 1.8 | 0.98 | 5.7 | 2.7 | 2.6 J | 2 | 7.5 | 3.6 | 2.8 | 0.4 J |
| ORTH 31ST ST, FD | 062 | - | - | - | - | 6.2 | - | - | - | - | - | - | - | 7.9 | - | - | - |
| ORTH 36TH ST | 063 | 8.8 | 6.4 | 2.7 | 1.2 | 11.7 | 4.8 | 1.6 | 2.9 J | 4 J | 4.6 | 5 | 4.1 | 3.5 | 3.3 | 4.3 | 2.4 |
| ORTH 36TH ST, FD | 063 | - | - | - | - | - | - | - | - | 3.9 | - | - | - | - | - | - | - |
| ORTH 38TH ST | 869 | 4.7 | 4 | 5.4 | 3.1 | 3.8 | 3.4 | 3 | 1.8 | 5.1 | 4.4 | 2 | 1.6 | 6.4 | 2.9 J | 2.8 | 3.2 |
| ORTH 38TH ST, FD | 869 | - | - | - | - | - | - | - | - | 5.2 | - | - | - | - | 5.3 J | - | - |
| ORTH 32ND ST | 546 | 6 | 7 | 9.2 | 1.7 | 5.5 | 5.2 | 2.5 | 1.3 | 2.3 | 2.1 | 2.2 | 2.6 | 7.2 J | 7.5 | 2.6 | 1.5 |
| ORTH 32ND ST, FD | 546 | 6.4 | - | - | - | - | - | - | - | - | - | - | - | 5.8 | - | - | - |
| ORTH 32ND ST | 067 | 5 | 4.3 | 5.4 | 3.2 | 4.7 | 3.8 | 4 | 3.5 | 4.8 | 3.6 | 3.9 | 3 | 6.5 | 5 | 3.3 | 1.9 |
| ORTH 32ND ST, FD | 067 | - | - | - | - | - | 4.2 | - | - | - | - | - | - | - | 3.5 | - | - |
| ORTH 45TH ST | 844 | 48.7 | 34.1 | 7.7 | 1.7 | 4.5 | 15.8 J | 7.9 | 1.4 | 1.8 | 1.6 | 7.9 | 20.4 | 15.6 | 28.6 | 9.5 | 7 |
| ORTH 45TH ST, FD | 844 | - | - | - | - | 4.6 J | - | - | - | 1.3 | - | - | - | - | - | - | - |
| ORTH 31ST ST | 070 | 3.8 | 3.3 | 2.5 | 1.6 | 4.8 | 4.9 | 3.7 | 1.7 | 5.9 | 5.6 | 4.2 | 3.3 | 7.1 | 2.1 | 1.8 | 1.6 |
| ORTH 31ST ST, FD | 070 | - | - | - | - | - | - | - | - | 5.9 | - | - | - | - | - | - | - |
| ORTH 34TH ST | 071 | 6.6 | 5.5 | 2.6 | 2.2 | 5.9 | 5.9 | 6.5 | 3.7 | 5.1 | 6.2 | 3.2 | 2.1 | 5.6 | 3.1 | 2.3 | 2.2 |
| ORTH 34TH ST, FD | 071 | - | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ORTH 38TH ST | 076 | 5.2 | 5.9 | 2.8 | 1.4 J | 3.4 | 3.4 | 1.7 | 0.5 | 7.1 | 3.6 | 1.3 | 0.28 J | 4.5 | 3.4 | 2.6 | 1.3 |
| ORTH 38TH ST, FD | 076 | - | - | - | - | - | - | - | - | - | - | - | - | 4.9 | - | - | - |
| ORTH 32ND ST | 081 | 5.1 | 4.8 | 1.4 | 1.1 | 2.7 | 3.5 | 0.99 | 0.58 | 5.3 | 4.8 | 1.8 | 1.7 | 2.7 | 2.5 | 0.65 | 0.56 U |
| ORTH 32ND ST, FD | 081 | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - | - |
| ORTH 38TH ST | 085 | 3.1 | 2.4 | 3.8 | 4.6 | 2.2 | 2.8 | 7.2 | 4.2 | 3.1 | 2.5 | 8 | 3.3 | 4.1 | 6.6 | 5.3 | 0.55 |
| ORTH 38TH ST, FD | 085 | - | - | - | - | - | - | - | - | - | - | - | - | 3.8 | - | - | - |
| ORTH 32ND ST | 087 | 5.2 | 4.6 | 3.1 | 1.2 | 10.5 J | 4.9 | 3.7 | 2.3 | 6 | 4.5 | 2.7 | 1.9 | 6.5 J | 5.7 | 2.1 | 3.1 |
| ORTH 32ND ST, FD | 087 | - | - | - | - | 15.4 J | - | - | - | - | - | - | - | 8.9 | - | - | - |
| ORTH 36TH ST | 563 | 14.6 | 10.3 | 5 | 2.8 | 15 | 20.1 | 10.5 | 6.7 | 15.8 | 21.5 | 9.8 | 4.4 | 9.8 | 7.9 | 2.7 | 5.4 |
| ORTH 36TH ST, FD | 563 | - | - | - | 2.3 | - | - | - | - | - | - | - | 5.5 | - | - | - | - |
| ORTH 36TH ST | 097 | 2.3 | 4.1 | 9.6 | 6.2 | 4.4 | 10.1 | 6 | 3.1 | 5.1 | 6.2 | 3.9 | 4.2 | 10.6 | 8.5 | 3.5 | 4.1 |
| ORTH 36TH ST, FD | 097 | - | - | 10.8 | - | - | - | - | - | - | 6.4 | - | - | - | - | - | - |
| ORTH 32ND ST | 098 | 5.4 J | 5.3 | 2.5 | 0.74 | 6.8 | 6.2 | 2.7 | 0.97 | 7 | 5.7 | 3.4 | 0.74 | 6.8 | 4.5 | 2 | 2 |
| ORTH 32ND ST, FD | 098 | 5.4 | - | - | - | - | - | - | - | - | 5 | - | - | - | - | - | - |
| ORTH 34TH ST | 099 | 3 | 2.9 | 2.3 | 1.1 | 3.5 | 4.5 | 2.2 | 1.3 | 3.8 | 3.3 | 1.8 | 0.86 | 3.5 | 3.3 | 2.2 | 1.3 |
| ORTH 34TH ST, FD | 099 | - | - | - | - | 4 | - | - | - | - | - | - | - | 3.8 | - | - | - |
| ORTH 31ST ST | 101 | 6 | 6.1 | 3.1 | 2.1 | 5.5 | 6.1 | 4.6 | 2.5 | 7.3 | 9.1 | 8.9 | 10 | 9.4 | 7.1 | 4.8 | 4.4 |
| ORTH 31ST ST, FD | 101 | - | - | - | - | 5.3 | - | - | - | - | 7.7 | - | - | - | - | - | - |
| ORTH 41ST ST | 843 | 4 | 4.6 | 2.8 | 1.7 | 6.5 | 8.5 | 8.7 | 5.2 | 9.6 | 10.9 | 17 | 6.2 | 13.7 | 16.9 | 8.9 | 6 |
| ORTH 41ST ST, FD | 843 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.9 | - |
| ORTH 34TH ST | 571 | 7 | 8.2 | 8.9 | 10.1 | 5.4 | 3.7 | 3.1 | 2.3 | 5.2 | 5.3 | 3.1 | 3.6 | 6.1 | 3.3 | 3 | 2.4 |
| ORTH 34TH ST, FD | 571 | 7.1 | - | - | - | - | - | 3.1 | - | 5.6 | - | - | - | 6.1 | - | - | - |
| ORTH 31ST ST | 106 | 6.6 | 7.1 | 4.3 | 2.9 | 6 | 6 | 6.4 | 5.4 | 8 | 5.3 | 2.3 | 2.2 | 4.7 | 3.8 | 1.7 | 1.3 |

Notes:
 " - inches below ground surface; " - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|-----------------|-------|--------|--------|--------|--------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 31ST ST, FD | 106 | - | - | - | - | 6.5 | - | - | - | - | - | 2.4 | - | - | - | - | - |
| NORTH 34TH ST | 574 | 4.7 | 6.5 | 8.7 | 7.6 | 6.2 | 11.5 | 7.1 | 4.6 | 5.2 | 7.6 | 4.5 | 3.4 | 5 | 3.9 | 3 | 2 |
| NORTH 34TH ST, FD | 574 | - | - | - | - | 11.5 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 116 | 0.66 | 1.4 | 1 | 7.1 | 8.6 | 3.6 J | 3 | 3.8 | 4.9 | 3.9 J | 4.9 | 5.8 | 3.1 | 4.6 | 9.3 | 15.7 |
| NORTH 38TH ST, FD | 116 | - | - | - | - | 19.4 J | - | - | - | - | 6.9 J | - | - | - | - | - | - |
| NORTH 36TH ST | 120 | 4.2 | 5.7 | 6.8 | 9.9 | 3.6 | 8 | 5.9 | 9.6 | 3.1 | 5.4 | 3.2 | 3.4 | 5.3 | 13.1 | 5 | 4.2 |
| NORTH 36TH ST, FD | 120 | - | - | 8.2 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 44TH ST | 820 | 4.1 | 5.4 | 16.3 | 16.4 | 7.3 | 3.6 | 13.2 | 4.7 | 4.6 | 16.1 | 14.5 | 26.1 | 2.8 | 4.2 | 25 | 12.2 |
| BELT AVE | 591 | 9.3 | 13.6 | 12.7 | 3.5 | 7.8 | 11.5 | 12.2 | 5.7 | 7.1 | 13.1 | 11.5 | 7.3 | 8.8 | 16.3 | 11.7 | 5.8 |
| BELT AVE, FD | 591 | 12.3 | - | - | - | - | - | 5.8 | - | - | - | - | - | - | - | - | - |
| NORTH 35TH ST | 135 | 11.9 | 7.1 | 3.4 | 2.4 | 6.9 | 4.6 | 2 | 2 | 8.3 | 9.4 | 3.9 | 3 | 5 | 9.4 | 15.4 | 6.1 |
| NORTH 35TH ST, FD | 135 | - | - | - | - | - | - | - | - | - | 3.7 | - | - | 5.1 | - | - | - |
| NORTH 37TH ST | 138 | 3.5 | 5.9 | 3.5 | 4.9 | 5.4 | 5.3 | 5.3 | 2.8 | 6.3 | 6.1 | 14.5 | 4 | 6.3 | 11.8 | 13.4 | 9.4 |
| NORTH 37TH ST, FD | 138 | - | - | - | - | - | - | - | - | - | - | - | - | 6.7 | 13.5 | - | - |
| NORTH 40TH ST | 852 | 5.7 | 8 | 14 | 10.2 | 4.3 | 3.8 | 7.2 | 4.1 | 5.2 | 8.5 | 10.3 | 3.6 | 11.3 | 8 | 3.9 | 0.8 |
| NORTH 40TH ST, FD | 852 | 6.6 | - | - | - | 3.9 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 152 | 4.6 | 4.5 | 4.9 | 5.6 | 2.6 | 3.8 | 3.3 | 4.8 | 3.7 | 3.5 | 5.6 | 6.7 | 5.2 | 6.2 | 4.6 | 2.2 |
| NORTH 38TH ST, FD | 152 | 3.6 | - | - | - | - | - | - | - | - | - | - | - | 6 | - | - | - |
| NORTH 39TH ST | 153 | 8.5 | 8.7 | 4.9 | 1.4 | 5.6 | 9.7 | 7 | 3.8 | 5.3 | 8.7 | 7.8 | 3 | 6.3 | 8.6 | 5.3 | 0.92 |
| NORTH 39TH ST, FD | 153 | - | - | - | - | - | 6.8 | - | - | - | - | - | - | - | - | - | - |
| NORTH 39TH ST | 157 | 2.7 | 5.9 | 9.8 | 11.6 | 5.2 J | 2.2 | 8.6 | 7.5 | 6.3 | 5.9 | 9.6 | 5.2 | 6.4 | 6 | 8.2 | 3 |
| NORTH 39TH ST, FD | 157 | - | - | - | 10.1 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 40TH ST | 911 | 14 | 10.2 | 4.2 J | 2.9 | 7.2 | 8.3 | 3.4 | 2.5 J | 8.9 | 8.8 | 6.8 | 2.1 | 10.5 | 12.8 | 14.2 | 6.2 |
| NORTH 40TH ST, FD | 911 | - | - | - | - | - | - | - | - | - | - | - | - | 11.1 | - | - | - |
| NORTH 44TH ST | 817 | 46.1 | 31.4 | 20.2 | 4.5 | 38 | 34.7 J | 12.1 | 3.1 | 40.7 | 24.8 | 9.7 | 2.1 | 48.3 | 26.2 | 7.3 | 1.7 |
| NORTH 44TH ST, FD | 817 | - | - | - | - | 37.9 | - | - | - | - | 25.8 | - | - | - | - | - | - |
| NORTH 62ND ST | 165 | 3.6 | 7.3 | 6.8 | 3.3 | 3.5 | 3.6 | 3 | 2.7 | 3.5 | 3.5 | 3.1 | 3.8 | 3.4 | 4.1 | 2.6 | 0.68 |
| NORTH 62ND ST, FD | 165 | - | - | - | 3.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 166 | 4.5 | 4.8 | 2.2 | 0.77 | 5.5 | 5 | 5.9 | 0.9 | 6.1 | 4.3 | 2.8 | 4.1 | 2.4 | 3.1 | 2.3 | 1.5 J |
| NORTH 62ND ST, FD | 166 | - | 3.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.3 J |
| NORTH 62ND ST | 600 | 3 | 2.7 | 2.1 | 0.6 | 2.8 | 3.5 | 0.61 | 0.3 J | 3.4 | 3.4 | 2.1 | 0.62 | 3.6 | 3.8 | 2.2 | 0.48 J |
| NORTH 62ND ST, FD | 600 | - | - | - | - | - | - | - | - | 3.1 | - | - | - | - | - | 2 | 3.4 |
| 2913 NORTH 61ST | 171 | 3.9 | 3.9 | 3.8 | 0.71 | 3.4 | 4.4 | 1.5 | 0.71 | 3 | 4.7 J | 4.1 | 0.62 | 3.8 | 4.4 | 3.1 | 0.77 |
| 2913 NORTH 61ST, FD | 171 | - | 3.9 | - | - | - | - | - | - | - | - | - | - | - | 4.1 | - | - |
| NORTH 61ST ST | 174 | 1.8 | 2.5 | 3.4 | 2.8 | 2.6 | 2.5 | 4 | 5 | 2 | 3.5 | 3 | 2.8 | 3.5 | 4.1 | 4.4 | 2.3 |
| NORTH 61ST ST, FD | 174 | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 176 | 2.5 | 4.4 | 3.8 | 4.7 | 6.7 | 7.4 | 7.1 | 5.3 | 4.6 | 6.9 | 7 | 6.5 | 4.2 | 6.5 | 5.4 | 6.2 |
| NORTH 61ST ST, FD | 176 | 2.9 | - | - | - | - | - | - | - | - | - | - | - | 3.2 | - | - | - |
| 2920 NORTH 61ST | 177 | 4.9 | 6.1 | 3.8 | 4.4 | 5.2 J | 5.2 | 2 | 0.76 | 4.9 | 5.6 | 5 | 1.6 | 5.9 | 4.9 | 2.9 | 1.7 |
| NORTH 61ST ST | 180 | 4.3 | 4.8 | 5.2 | 3.9 | 3.5 | 5.2 | 6.5 | 5.5 | 3.3 | 3.4 | 4.8 | 2.7 | 4.4 | 4.7 | 3 | 3.3 |
| NORTH 61ST ST, FD | 180 | - | - | - | - | - | 6.3 | - | - | - | - | - | - | - | 4.5 | - | - |
| NORTH 61ST ST | 181 | 3.7 | 4.4 | 5.4 | 3.1 | 2.3 | 2.9 | 4.1 | 4.5 | 2.2 | 2 J | 3.8 | 3.7 | 2.2 | 2.8 | 5 | 3.1 |
| NORTH 61ST ST | 183 | 2.7 | 3.1 | 4.6 | 4.5 | 1.1 | 0.87 | 3.7 | 5.1 | 2.5 | 2.1 | 3.4 | 4.3 | 3.7 | 4.8 | 4.5 | 2 |
| NORTH 61ST ST | 184 | 2.6 | 3.3 | 5.6 | 5.5 | 1.2 | 2.1 | 4.3 | 3.7 | 2.4 | 1.7 | 3.2 | 5.4 | 2.5 | 3.1 | 5.6 | 4.9 |
| NORTH 61ST ST, FD | 184 | - | - | - | - | - | 3.5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 186 | 5.3 | 6.6 | 3.3 | 0.53 | 5.1 | 6.5 | 5.2 | 1.2 | 6.2 | 6.6 | 5.5 | 0.97 | 6.1 | 6.2 | 6.2 J | 1.2 |
| NORTH 60TH ST, FD | 186 | 6.1 | - | - | - | - | - | - | - | - | - | - | - | - | 3.7 J | - | - |
| NORTH 61ST ST | 187 | 1.7 | 4.2 | 5.5 | 2.4 | 0.93 | 5.8 | 5.2 | 2.2 | 3.7 | 5.3 | 4.6 | 0.58 | - | - | - | - |
| NORTH 61ST ST, FD | 187 | - | - | - | - | - | - | - | 2.9 | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 188 | 4.6 J | 5.1 | 4 | 5.2 | 2.9 | 2.5 | 4.7 | 4.7 | 2.8 | 3.3 | 3.5 | 1.5 | 3.2 | 2.8 | 4.2 | 2.9 |

Notes:
 " - inches below ground surface; " - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|-----------------|-------|--------|--------|-------|-------|--------|--------|------|-------|--------|--------|-------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 61ST ST, FD | 188 | - | - | - | - | - | - | - | - | 3.8 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 190 | 4.3 | 5 | 4.3 | 2.7 | 5.4 | 5.6 | 3.2 | 1.8 | 1.6 | 7.5 | 7.9 | 5.6 | 4.5 | 5 | 5.8 | 4.1 |
| NORTH 62ND ST, FD | 190 | - | - | - | - | - | - | - | - | 6.9 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 191 | 2.3 | 1.8 | 1.7 | 1.8 | 1.9 | 2.2 | 5.6 | 6.4 | 2.2 | 3 | 4.6 | 2.7 | 3.4 | 4 | 3.6 | - |
| NORTH 62ND ST, FD | 191 | - | - | - | - | - | - | - | - | - | 3.4 | - | - | - | 4.6 | - | - |
| NORTH 62ND ST | 192 | 2.5 | 2.7 | 3.1 | 4.4 | 2.2 | 2.4 | 4.2 | 4.7 | 2.7 | 2.3 | 4.5 | 4.4 | 2.4 | 2.6 | 3.3 | 2.7 |
| NORTH 62ND ST, FD | 192 | - | - | - | - | 2.2 | - | - | - | - | - | - | - | - | - | 4.7 | - |
| NORTH 63RD ST | 193 | 3.9 | 4.1 | 3.1 | 3.3 | 2.7 | 3.4 | 3.1 | 4.3 | 2.7 | 1.8 J | 2.2 | 4.6 | 3.1 J | 5.1 | 4.2 | 4 |
| NORTH 63RD ST, FD | 193 | - | - | - | - | 2.8 | - | - | - | - | - | - | - | 3.8 | - | - | - |
| NORTH 62ND ST | 194 | 5.9 | 1.3 | 1.6 | 3 | 2.2 J | 1.7 | 2.9 | 4.2 | 2.1 | 2.8 | 4.6 | 3.1 | 4.6 | 5 | 3.2 | 0.99 |
| NORTH 62ND ST, FD | 194 | - | - | - | 1.4 | 1.5 J | - | - | - | - | 4 | - | - | - | - | - | - |
| NORTH 62ND ST | 195 | 5.3 | 7.9 | 5 | 4 | 4.5 | 6.3 | 4.6 | 2.1 | 3.6 | 4.7 | 1.7 | 0.89 | 3.9 | 4.4 | 3.3 | 1.4 |
| NORTH 62ND ST, FD | 195 | - | - | - | - | - | - | - | - | - | 4.8 | - | - | - | - | - | - |
| NORTH 63RD ST | 196 | 0.75 | 0.67 | 0.54 | 1.5 | 2.3 | 0.66 | 2 | 3.5 | 1.2 | 2.9 | 3.6 | 3 | 2.7 | 4.5 | 2.6 | 0.64 |
| NORTH 63RD ST, FD | 196 | - | - | - | - | - | - | - | - | - | - | 3.5 | - | - | - | - | - |
| NORTH 62ND ST | 197 | 1.8 | 1.3 | 3.1 | 6.5 | 3.5 | 4.9 | 2.6 | 2.5 | 4 | 4.7 | 5.6 | 3.8 | 5.7 | 5.2 | 4.1 | 1.8 |
| NORTH 62ND ST, FD | 197 | - | 1.2 | - | - | - | - | - | - | - | - | - | - | - | 5.7 | - | - |
| NORTH 62ND ST | 199 | 1.7 | 2.6 | 1.1 | 5.6 | 3.5 | 1.6 | 9.9 | 7.3 | 4.2 | 3.3 | 8 | 6.6 | 1.9 | 2 J | 4.1 | 5.3 |
| NORTH 62ND ST, FD | 199 | 1.8 | - | - | - | - | - | - | 7.5 | - | - | - | - | - | 3.9 J | - | - |
| NORTH 62ND ST | 202 | 1.9 | 2.3 | 3.1 | 1.7 | 1.4 | 2.1 | 3.3 | 2.3 | 2.2 | 2.7 | 6.3 | 5.4 | 3.2 | 3.9 | 4.8 | 4.8 |
| NORTH 62ND ST, FD | 202 | - | 2.2 | - | - | - | - | - | - | 2.3 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 204 | 3 | 2.9 | 4.2 | 2.3 | 2 | 3 | 4.3 | 4 | 7.1 | 3.4 | 2.8 | 5.6 | 3.2 | 2.9 | 3.7 | 3.9 |
| NORTH 62ND ST, FD | 204 | - | - | - | - | - | - | - | - | - | - | - | - | - | 3.3 | - | - |
| NORTH 63RD ST | 206 | 2.8 | 3.5 | 3 | 0.65 | 3.1 | 2.5 | 3.4 J | 1.1 | 2.3 | 3.6 | 2.2 | 0.66 | 2.8 | 3.2 | 2 | 2 |
| NORTH 63RD ST, FD | 206 | - | 3.8 | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - |
| NORTH 63RD ST | 207 | 3.3 | 3.7 | 1.8 | 0.51 | 2.8 | 1.2 | 3 | 0.92 | 2.6 | 3.4 | 3 | 1.3 | 4.2 | 4 J | 1.3 | 0.32 J |
| NORTH 63RD ST, FD | 207 | - | 3.9 | - | - | - | - | - | - | - | 3.5 | - | - | - | - | - | - |
| NORTH 62ND ST | 209 | 3.1 | 4.1 | 5.1 | 4.6 | 3.1 | 5.2 | 4.6 | 2.1 | 1.6 | 2.3 | 4.1 | 2.9 | 2.1 | 2.4 | 3.2 | 2.3 |
| NORTH 62ND ST, FD | 209 | 4.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 2.9 | - |
| NORTH 62ND ST | 210 | 1.8 | 1.6 | 2 | 5.6 | 1.9 | 1.6 | 3.5 | 1.4 | 3.2 | 2 | 3.2 | 5.2 | 3.7 | 4.9 | 3.6 | 4.1 |
| NORTH 62ND ST, FD | 210 | - | - | - | - | - | 2.2 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 212 | 3.4 | 4.9 | 4.7 | 2.4 | 4.4 | 5.2 | 4.1 | 3.2 | 4.5 | 5 | 4.2 | 2.4 | 3.9 | 5.1 | 3.2 | 1.6 |
| NORTH 62ND ST, FD | 212 | - | - | - | - | - | 4.7 | - | - | - | - | - | - | - | - | 3.8 | - |
| NORTH 62ND ST | 215 | 2.7 | 2.1 | 4.3 | 5.2 | 1.6 | 2.2 | 2.2 | 5.7 | 1.8 | 2.9 | 5.4 | 3.5 | 3.3 | 1.2 | 3.7 | 3.3 |
| NORTH 62ND ST, FD | 215 | - | - | - | - | 1.5 | - | - | - | - | - | - | 4.1 | - | - | - | - |
| NORTH 63RD ST | 217 | 3.6 | 3.9 | 2.3 | 0.42 J | 3.4 | 3.3 | 3 | 1.1 | 3.4 | 5 J | 1.8 | 1 | 4 | 4.4 | 1.1 | 0.64 |
| NORTH 63RD ST, FD | 217 | - | - | - | - | 3.6 | - | - | - | - | - | - | - | - | 0.85 | - | - |
| NORTH 60TH ST | 222 | 3.1 | 4.5 | 8.3 | 5.8 | 1.9 | 2.6 | 4.8 | 5.6 | 2.6 | 3.9 J | 4.5 | 5.1 | - | - | - | - |
| NORTH 60TH ST, FD | 222 | - | - | - | - | 1.7 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 224 | 6.7 | 7.3 | 2.2 | 1.8 | 7.4 | 9 | 2.5 | 1.1 | 6.3 | 5.7 | 2.9 | 0.79 | 7.5 | 6.1 | 4.8 | 1.6 |
| NORTH 61ST ST, FD | 224 | - | - | - | - | - | - | - | - | - | 3.6 | - | - | - | - | - | - |
| NORTH 62ND ST | 225 | 2.8 | 3.3 | 7.1 | 3.8 | 1.8 | 3.1 J | 4.6 | 4.2 | 1.9 | 3.3 | 4.5 | 2.6 | 3.8 J | 5.3 | 4.3 | 2.2 |
| NORTH 62ND ST, FD | 225 | 2.6 | - | - | - | - | 1.7 J | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 605 | 5.4 | 6.7 | 6.7 | 1.3 | 3.4 | 5.9 | 4.8 | 1.8 | 1.1 | 1.6 | 8.3 | 6.6 | 2.1 | 4.1 | 6.3 | 4.5 |
| NORTH 60TH ST, FD | 605 | - | - | - | - | 2.8 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 229 | 5.1 | 4.1 | 2.4 | 1.1 | 4 | 6 | 2.6 | 2.3 | 5.7 | 6.5 | 3.4 | 0.91 | 4.6 | 5.2 | 4.6 | 2 |
| NORTH 61ST ST, FD | 229 | - | 3.8 | - | - | - | 4.7 | - | - | - | - | - | - | 5.2 | - | - | - |
| NORTH 62ND ST | 232 | 3.1 | 8.1 | 6.8 | 8.6 | 0.99 | 0.6 | 4 | 6.2 | 2.8 | 4.9 | 7.1 | 2.8 | 4.7 | 4.4 | 4.8 | 1.8 |
| NORTH 62ND ST, FD | 232 | - | - | - | 10.1 | - | - | - | - | - | - | - | - | 5.1 | - | - | - |
| NORTH 63RD ST | 233 | 2.9 | 4.4 | 3.2 | 0.95 | 4.9 | 5 | 2.4 | 0.58 | 4 | 4.3 | 2.1 | 1.6 | 3.3 | 4.1 | 2.6 | 0.9 |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|-----------------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|-------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 63RD ST, FD | 233 | - | - | - | - | - | 4.5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 234 | 4.8 | 6.9 | 6.2 | 4.5 | 7.8 | 8.5 J | 3.7 | 1.9 | 8.5 | 6.8 J | 4.6 | 1.1 | 7.1 | 5.9 | 1.8 | 1.8 |
| NORTH 60TH ST, FD | 234 | - | - | - | - | - | - | - | - | - | - | - | - | 6.8 | - | - | - |
| NORTH 60TH ST | 235 | 4.8 | 6.7 | 5 | 2.3 | 4.1 | 6.3 | 6.6 | 1.9 | 6.2 | 8 | 5.7 | 3.3 | 8.2 | 6.9 | 3.7 | 3.5 |
| NORTH 60TH ST, FD | 235 | - | - | - | - | - | 5.5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 237 | 2.6 | 4.2 | 5.4 | 4.2 | 3.8 | 2.7 | 6.5 | 5.2 | 6.9 | 7.4 | 4.1 | 2.8 | 5.9 | 3.9 | 3.7 | 2.1 |
| NORTH 60TH ST, FD | 237 | - | - | 5.3 | - | - | - | - | - | - | - | - | - | 6.3 | - | - | - |
| N 61ST ST | 241 | 6.8 | 6.1 | 2.2 | 1.2 | 4 | 4.3 | 3.4 | 4.4 | 3.6 | 4.3 | 5 | 2 | 3.9 | 5.6 | 5.7 | 2.7 |
| N 61ST ST, FD | 241 | 6.6 | - | - | - | - | 4.1 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 243 | 6.8 | 5.7 | 2.8 | 1.5 | 5.5 | 4.5 | 1.2 | 1.1 J | 2.4 | 3.9 | 4.5 | 1.1 | 4.4 | 4.6 | 2.8 | 0.77 |
| NORTH 61ST ST, FD | 243 | 6.3 | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - |
| NORTH 62ND ST | 246 | 4.4 | 4.5 | 2.7 | 0.59 | 5.9 | 5.6 | 3.1 | 0.64 | 4.7 | 4.9 | 2.7 | 0.63 | 7.2 | 4.7 | 2.6 J | 0.6 |
| NORTH 62ND ST, FD | 246 | 4.7 | - | - | - | - | 5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 252 | 7.8 | 5.8 | 4.2 | 3.2 | 5.9 | 5.1 | 4.2 | 2.3 | 4.8 | 6.2 | 4.6 | 2.1 | 6.5 | 6.1 | 3.8 | 3.2 |
| NORTH 61ST ST, FD | 252 | - | - | - | - | - | - | - | 1.7 | - | - | - | - | 7.5 | - | - | - |
| NORTH 61ST ST | 608 | 7.4 | 5.4 | 2.2 | 1.9 | 5.8 | 6.4 | 2.4 | 1.5 | 6.5 | 5.8 | 4.5 | 1.2 | 7.3 | 5.1 | 4.6 | 1.7 |
| NORTH 61ST ST, FD | 608 | 6.2 | - | - | - | - | - | - | - | 6.3 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 257 | 2.5 | 4.1 | 5.2 | 4.7 | 1.1 | 2.4 | 4.8 | 3.9 | 2.6 | 3.5 | 3.9 | 3 | 2.4 | 2.6 | 1.7 | 0.6 U |
| NORTH 62ND ST, FD | 257 | - | - | - | - | 1.3 | - | - | - | - | - | - | - | - | 2.5 | - | - |
| NORTH 62ND ST | 259 | 1.3 | 2.8 | 4.4 | 2.5 | 1.5 | 3 J | 3.7 | 3.3 | 0.77 | 1.7 | 3.1 | 2.4 | 1.5 | 2.9 | 3.4 | 1.7 |
| NORTH 62ND ST, FD | 259 | - | - | - | - | - | - | - | - | 1.6 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 263 | 4.3 | 8.1 | 5.5 | 1.4 | 5.3 | 9 | 3.3 | 1.6 | 2.3 | 5.7 | 4.3 | 3.3 | 6 | 3.6 J | 3.3 | 0.74 |
| NORTH 61ST ST, FD | 263 | - | - | - | - | 3.2 | - | - | - | - | - | - | - | - | 5.3 J | - | - |
| NORTH 61ST ST | 266 | 5.8 | 6.4 | 6.3 | 2.9 | 5.3 | 5.6 | 3.8 | 5.6 | 6.3 | 6.6 | 4.2 | 3.2 | 5.3 | 5 | 2.4 | 3.3 |
| NORTH 61ST ST, FD | 266 | - | - | - | - | 5.9 | - | - | - | 6.1 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 268 | 8.1 | 6.1 | 2.4 | 1 | 2.9 | 8.9 | 3.2 | 2.4 | 4.2 | 5.6 | 2.1 | 1.9 | 6.3 J | 6.6 | 3.8 | 3.5 |
| NORTH 61ST ST, FD | 268 | - | - | - | - | - | - | - | - | 5.9 | - | - | - | - | - | - | - |
| NORTH 63RD ST | 270 | 4.4 | 3.8 | 2 | 0.56 | 4.2 | 3.6 | 3.8 | 0.49 | 2 | 2.6 | 2.4 | 0.58 | 4.8 | 3.5 | 1.2 | 0.94 |
| NORTH 63RD ST, FD | 270 | - | - | 2.6 | - | - | - | - | - | - | - | - | - | - | - | - | 1.1 |
| NORTH 61ST ST | 274 | 5.5 | 6.1 | 5.5 | 1.5 | 4.1 | 4.3 | 3.2 | 0.83 | 5.1 | 4.2 | 2.2 | 1.5 | 4.9 | 5.1 | 1.9 | 1.5 |
| NORTH 61ST ST, FD | 274 | - | - | - | - | 3.3 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 59TH ST | 276 | 5 | 7.1 | 2.9 | 2.1 | 8.3 | 8.5 | 2.9 | 2.4 | 6.6 | 6.7 | 3.2 | 3.8 | 4.4 | 5.1 J | 1.9 | 0.71 |
| NORTH 59TH ST, FD | 276 | - | 6.8 | - | - | - | - | - | - | 6.1 | - | - | - | - | 5.1 | - | - |
| NORTH 61ST ST | 279 | 5.8 | 9.9 J | 5.7 | 1.6 | 6.2 | 4.4 | 2.6 | 2.3 | 4.9 | 4 | 1.3 | 0.76 | 4.9 | 4.8 | 2.7 | 0.59 |
| NORTH 61ST ST, FD | 279 | - | 6.1 J | - | - | - | - | - | - | - | - | - | - | - | 2.3 | - | - |
| NORTH 60TH ST | 290 | 2.5 | 5 | 3.9 | 5.4 | 2.1 | 3.1 | 4 | 5.1 | 3.2 | 4.6 | 3.7 | 2.5 | 3.2 | 4.3 | 4.8 | 2.6 |
| NORTH 60TH ST, FD | 290 | - | - | - | - | 3.5 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 292 | 3.9 | 3 | 4.8 | 5.7 | 3.4 | 4.6 | 5.1 | 5.2 | 4.5 | 4.9 | 5.9 | 2.6 | 5.4 | 5.5 | 2.2 | 0.67 |
| NORTH 60TH ST, FD | 292 | - | - | - | - | - | - | - | 5 | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 297 | 2.4 | 3.2 | 4.5 J | 3.2 | 1.7 | 2.5 | 4.2 | 6.1 | 2.9 | 2.9 | 3.9 | 3.9 J | 3 | 4.8 | 2.8 | 2.9 |
| NORTH 62ND ST, FD | 297 | 2.1 | 3.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 299 | 3.2 | 8.7 | 4.4 | 1.9 | 4.6 | 6.4 | 3.1 | 2.6 | 3.5 | 3.4 J | 3.2 | 2.7 | 3.7 | 3.4 | 3.5 | 2.6 |
| NORTH 62ND ST, FD | 299 | 2.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 766 | 8.8 | 27.1 | 6.5 | 8.4 | 8.2 | 8.3 | 5.3 | 6.6 | 6.8 | 5.2 | 3.3 | 2.9 | 6.2 | 5.8 | 4.6 | 3.7 |
| MAPLE AVE, FD | 766 | 10.1 | - | - | - | - | - | - | - | - | - | - | - | 6.5 | - | - | - |
| MAPLE AVE | 767 | 5.8 | 5.6 | 8.5 | 2.8 | 7.7 | 8.1 | 5.9 | 6.5 | 7.2 | 4.7 | 11 | 3.9 | 6.1 | 7 | 8.1 | 12.8 |
| MAPLE AVE, FD | 767 | 6.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 309 | 7.9 | 6.9 | 4.8 | 4.1 | 13.8 | 9.7 | 2.1 | 2 | 7.3 | 18.8 | 2.8 | 3.7 | 5.4 | 3.7 | 3.4 | 2.4 |
| MAPLE AVE, FD | 309 | 7.4 | - | - | - | 13.6 | - | - | - | - | - | - | - | - | 3.4 | - | - |
| MAPLE AVE | 310 | 4 | 4 | 4.2 | 4.8 | 4.6 | 3.5 | 4.6 | 6.2 | 6.6 | 5.5 | 6.9 | 7.8 | 6.2 | 4.1 | 7.5 | 1.4 |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|-----------------|-------|--------|--------|-------|--------|--------|--------|------|-------|--------|--------|--------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| MAPLE AVE, FD | 310 | - | - | - | - | - | - | - | - | 4.9 | - | - | - | - | - | - | - |
| MAPLE AVE | 618 | 5 | 3.7 | 2.7 | 2 | 7.1 | 6.7 | 3.6 | 3.4 | 7.7 | 7.7 | 3.9 | 4 | 8.9 | 10.9 | 3.6 | 3 |
| MAPLE AVE, FD | 618 | 5 | - | - | - | - | 9.1 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 312 | 2.1 | 3.9 | 0.58 | 2.8 | 3.5 | 3.3 | 2.5 | 1.1 | 2.7 | 3.5 | 4.6 | 2.1 | 2.9 | 2.7 | 3 | 2.2 |
| NORTH 62ND ST, FD | 312 | - | - | - | - | 3.6 | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 619 | 10.8 | 9.4 | 5.2 | 4.7 | 10.7 | 7.7 | 6.9 | 4.3 | 10.6 | 8.5 | 5.6 | 5.1 | 10.3 | 8 | 8.4 J | 6.1 |
| MAPLE AVE, FD | 619 | - | - | - | - | - | - | - | - | - | - | - | - | 10.7 | 8.4 | - | - |
| MAPLE AVE | 317 | 4.1 | 4.9 | 3.3 | 1.3 | 3.7 | 5.6 | 2.9 | 1.7 | 7.3 | 5.5 | 3.2 | 2.5 | 11 | 5.9 | 3.7 | 7.2 |
| MAPLE AVE, FD | 317 | - | - | - | - | - | - | - | - | 4.9 | 5.4 | - | - | - | - | - | - |
| NORTH 62ND ST | 319 | 3.3 | 4.1 | 3.5 | 1.3 | 4.7 | 4.7 | 2.8 | 1.4 | 2.9 | 3.3 | 1.7 | 0.66 | 3.1 | 3.3 | 1.3 | 0.74 |
| NORTH 62ND ST, FD | 319 | - | - | - | - | - | 4.7 | - | - | - | - | - | - | - | - | - | 0.54 |
| NORTH 62ND ST | 320 | 3.8 | 3.2 | 2.4 | 1 | 4.5 | 4.8 | 3 | 2.7 | 5.6 | 5.4 | 3.4 | 1.1 | 6.1 | 5.4 | 2.9 | 0.77 |
| NORTH 62ND ST, FD | 320 | 4.3 | - | - | - | - | - | - | - | - | - | - | - | 5.8 | - | - | - |
| MAPLE AVE | 323 | 6.3 | 7.7 | 7.1 | 5.2 J | 5.7 | 5.4 | 7.6 | 4.8 | 5.3 | 6.6 | 5.2 | 3.7 | 5.5 | 6 | 6.6 | 3.4 |
| MAPLE AVE, FD | 323 | - | 7.5 | - | 5.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 324 | 6.8 | 5.6 | 8.3 | 6.7 | 4.7 J | 6.7 | 6.3 | 4.1 | 18.7 | 162 | 4.3 | 4.7 | 9.5 | 14.2 | 6.4 | 6.2 |
| MAPLE AVE, FD | 324 | - | - | 7.3 | 6.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 325 | 3.2 | 2.2 | 1.5 | 6.6 | 1.3 | 1.3 | 1.6 | 6.7 | 2.1 | 2.5 | 4.2 | 3.9 | 2.7 | 2.7 | 4.8 | 4.9 |
| MAPLE AVE, FD | 325 | - | - | - | - | - | - | - | 5 | 1.9 | - | - | - | - | - | - | - |
| MAPLE AVE | 326 | 10.5 | 8.3 | 8.5 | 8.5 | 7.5 | 19.6 | 8.2 | 8.6 | 11.2 | 15.2 | 8.5 | 3.8 | 5.7 | 6.9 | 8.2 | 4.6 |
| MAPLE AVE, FD | 326 | - | - | - | - | 8.6 | 24.3 | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 859 | 3.2 | 3.8 | 11.8 | 7.2 | 3.3 | 2.4 | 4 | 11.7 | 2.7 | 2 | 4.6 | 7.2 | 3.5 | 4.9 | 10 | 7 |
| MAPLE AVE, FD | 859 | - | - | - | - | 3.8 | - | - | - | 3.3 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 329 | 4.9 | 2.7 | 3 | 4.3 | 3.1 | 3 | 4.4 | 6.6 | 3 | 2.4 | 6.6 | 7.1 | 2.6 | 1.8 | 5.9 | 11 J |
| COLLINSVILLE RD, FD | 329 | - | - | - | - | - | - | - | 4.7 | - | - | - | - | - | - | - | - |
| COOKSON RD | 330 | 10.6 | 10.1 | 5.4 | 1.1 | 9 | 11.9 | 2.5 | 0.79 | 6.1 | 6.7 | 6.8 | 3.7 | 3.8 | 6.2 | 4.1 | 1.3 |
| COOKSON RD, FD | 330 | - | - | - | - | - | - | - | - | 6.1 | - | - | - | - | - | - | - |
| MAPLE AVE | 910 | 4.2 | 5.2 | 5.3 | 3.3 | 2.7 | 1.9 | 10.9 | 15.2 | 1.6 | 2.5 | 8.2 | 17.7 | 5.6 | 8.8 | 6 | 5.7 |
| MAPLE AVE, FD | 910 | - | - | - | - | 2.6 | - | - | - | - | - | - | - | 6.4 | - | - | - |
| COLLINSVILLE RD | 866 | 2.4 | 3.2 | 2.6 | 1.3 | 6.7 J | 10.9 | 3.5 | 1.1 | 7.4 | 6.3 | 8.7 | 1.9 | 9.2 | 5.6 | 4.7 | 2 |
| COLLINSVILLE RD, FD | 866 | - | - | - | - | - | - | - | 1.6 | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 909 | 20.8 | 20.8 | 8.4 | 3.4 | 11.9 | 12.8 | 5.3 | 1.4 | 7.6 | 7.2 | 4.3 | 2.1 | - | - | - | - |
| COLLINSVILLE RD, FD | 909 | - | - | - | - | - | - | - | - | 7.1 | - | - | - | - | - | - | - |
| LOCUST ST | 908 | 10.7 | 4.1 | 2.2 | 4.2 | 3.8 | 6.6 | 3.8 | 2.3 | 4.4 | 9.1 | 2.5 | 1.2 | 11.4 | 8.1 | 4.1 | 1.8 |
| LOCUST ST, FD | 908 | - | - | - | - | - | 8.7 | - | - | - | - | - | - | 13.7 | - | - | - |
| COOKSON RD | 846 | 5.2 | 13.4 | 4.7 | 5.9 | 19 J | 10.4 | 20.8 | 30.4 | 8.1 | 5.1 | 4.5 | 0.74 | 13 | 13.6 | 13.9 | 1 |
| COOKSON RD, FD | 846 | - | - | - | - | - | 10.1 | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 821 | 9.1 | 9.8 | 2.3 | 1.2 | 9.8 J | 7.5 | 2.3 | 1.3 | 16.6 | 16.1 | 6.8 | 1.9 | 4.7 | 8.1 | 10.7 | 3.5 |
| COOKSON RD, FD | 821 | - | - | - | - | 9.7 | - | - | - | - | - | - | - | - | 7.9 | - | - |
| COLLINSVILLE RD | 811 | 3.9 | 1.4 | 3.4 | 3.4 | 2.2 | 3.4 | 2.5 | 1.5 | 2.9 | 13.8 | 2.5 | 2.7 | 0.61 U | 3.8 | 2.5 | 1.1 |
| COLLINSVILLE RD, FD | 811 | - | - | - | - | 3.4 | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 819 | 4 | 28.2 | 84.1 | 13.8 | 1.9 | 1.5 | 9.9 J | 14.7 | 3.7 | 10.6 | 42.8 | 92.6 | 5.3 | 10 | 18.8 J | 14.2 |
| COOKSON RD, FD | 819 | - | - | - | - | - | 21.5 J | - | - | - | - | - | - | - | 31.5 J | - | - |
| COOKSON RD | 812 | 4 | 11.7 | 11.6 | 18.4 | 8.1 | 10.2 | 21.9 | 7.6 | 6.6 | 9.4 | 19.8 | 4.7 | 4.9 | 10.5 J | 33.1 | 10.4 |
| COOKSON RD, FD | 812 | - | - | - | - | - | - | - | - | - | - | - | - | - | 10.6 | - | - |
| COLLINSVILLE RD | 825 | 14 | 8.4 | 2.6 | 1.9 | 24.3 | 23.2 | 38.8 | 9.9 | 11.3 | 12.4 | 13.3 | 22.9 | 7.2 | 7.2 | 24.3 | 143 |
| COLLINSVILLE RD | 845 | 70.5 | 54 | 35.9 | 15.7 | 68.9 | 55.4 | 30.2 | 8.8 | 71.4 | 53.6 | 38.1 | 13.5 | 56.8 | 52.5 | 25.2 | 8.6 |
| COLLINSVILLE RD, FD | 845 | - | - | - | - | 70.9 | - | - | - | - | - | - | - | - | 51.8 | - | - |
| DELMAR AVE | 352 | 22 | 20.6 | 8.8 | 6.4 | 25.4 | 25.9 | 20.6 | 7.9 | 18.5 | 31.2 | 26.2 | 12.2 | 27.1 | 26.3 | 17.8 | 6.8 |
| DELMAR AVE, FD | 352 | - | - | - | - | - | - | - | - | - | - | - | - | 29.8 | - | - | - |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Cadmium (mg/kg) | | | | | | | | | | | | | | | |
|------------------------|-------------|-----------------|-------|--------|--------|------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| KINDER DR | 769 | 19.7 | 13.5 | 2.2 | 0.7 U | 17.4 | 21 | 4.2 | 0.69 U | 27 | 16.9 | 3.5 | 1.2 | 18.6 | 12.1 | 2 | 1.1 |
| KINDER DR, FD | 769 | - | - | - | - | - | 21.1 | - | - | - | - | - | - | - | - | - | - |
| THOMAS AVE | 827 | 16.4 | 18.2 | 5.4 | 10 | 17.7 | 18.1 | 5.3 | 3.1 | 12.1 | 18.2 | 7.1 | 3.8 | 13.2 J | 14.8 | 4 | 2.8 |
| THOMAS AVE, FD | 827 | - | - | - | - | - | 16.2 | - | - | - | - | - | - | 18.8 J | - | - | - |
| THOMAS AVE | 900 | 11.6 | 15.2 | 10.3 | 2.3 | 10.5 | 9.8 | 10 | 12.6 | 21.8 | 16.4 | 3.4 | 2.1 | 18 | 19.2 | 3.4 | 2.9 |
| THOMAS AVE, FD | 900 | - | - | - | - | 9.2 | - | - | - | - | - | - | - | 21 | - | - | - |
| KINDER DR | 367 | 19.3 | 18.2 | 12.4 | 10.8 | 15.6 | 11.9 | 14.2 | 7.3 | 11.7 | 11.7 | 5.9 | 3.4 | 10.7 | 11.8 | 9.9 | 4.5 |
| KINDER DR, FD | 367 | - | - | - | - | - | - | - | - | 12.5 | - | - | - | - | - | - | 5.6 |
| MARYLAND AVE | 653 | 13.6 | 13.8 | 10.7 | 5.3 | 14.1 | 17.9 | 7.3 | 2.8 | 9.7 | 13.3 | 6 | 4.4 | 5.7 | 16.3 | 25.5 | 10.3 |
| MARYLAND AVE, FD | 653 | 12.2 | - | - | - | 16.3 | - | - | - | - | - | - | - | - | - | - | - |
| KINDER DR | 378 | 7.7 | 12.4 | 18.2 | 10.6 | 6.6 | 7.7 | 12 | 9.8 | 9.6 | 13.1 | 12.8 | 10 | 13.6 | 12 | 14.2 | 8 |
| KINDER DR, FD | 378 | - | - | - | - | - | - | - | - | - | - | - | - | 11.5 | - | - | - |
| MARYLAND AVE | 384 | 6.2 | 6.5 | 35.2 | 22.7 | 4.3 | 4.4 | 4.3 | 5.4 | 20 | 17.5 | 19.8 | 13.8 | 4.9 | 4.3 | 10.2 | 12.7 |
| MARYLAND AVE, FD | 384 | - | - | - | - | - | - | - | - | 18 | - | - | - | - | 5.3 | - | - |
| COLLINSVILLE RD | 388 | 35.1 | 27.2 | 7.6 | 15.6 | 5.3 | 2.5 | 0.79 | 0.81 | 24.8 | 34 | 18.6 | 8.7 | 17.8 | 34.5 | 37.2 | 18.2 |
| COLLINSVILLE RD, FD | 388 | - | - | - | - | - | - | - | - | 32.5 | - | - | - | - | - | - | - |
| HILL AVE | 660 | 10.2 | 5.4 | 12 | 2.3 | 5.6 | 8.4 | 14.3 | 7.2 | 14.6 | 6.4 | 2.3 | 2 | 14.5 | 14.1 | 4.2 | 2.6 |
| HILL AVE, FD | 660 | - | - | - | - | 7.3 | - | - | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 389 | 5 | 7.9 | 5.6 | 9.2 | 6 | 9.5 | 11.7 | 6.8 | 3.7 | 6.6 | 11.1 | 3.8 | 5.7 | 7.1 | 5.5 | 3 |
| COLLINSVILLE RD, FD | 389 | - | - | - | - | - | - | - | - | 7 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 392 | 9.8 | 5.4 | 8.3 | 3.3 | 5.5 | 9.5 | 11.6 | 3.8 | 5.9 | 6.2 | 2.7 | 8.7 | 8.5 | 4.3 | 1.7 | 3.8 |
| COLLINSVILLE RD, FD | 392 | - | 7.4 | - | - | - | - | - | - | - | 2.8 | - | - | - | - | - | - |
| COLLINSVILLE RD | 395 | 5 | 6.3 | 3.6 | 0.64 | 4.8 | 4.5 | 2.4 J | 3.2 | 4.4 | 4.8 | 2.9 | 0.61 U | 5.4 | 5.5 | 1.8 | 0.66 |
| COLLINSVILLE RD, FD | 395 | - | - | - | - | - | 4.1 J | - | - | - | - | - | - | - | 5 | - | - |
| COLLINSVILLE RD | 396 | 3.4 | 4.2 | 3.9 | 0.89 | 3.4 | 3.8 | 4.2 | 1.4 | 3.9 | 3.3 | 1.9 | 1 | 4.2 | 3.4 | 2 | 1.2 |
| COLLINSVILLE RD, FD | 396 | - | - | - | - | - | - | - | - | - | - | - | - | 3.5 | - | - | - |
| COLLINSVILLE RD | 398 | 4.8 | 3.8 | 2.3 | 3.7 | 3.1 | 3.4 | 3.8 | 2.2 | 3.1 | 4.2 | 4.8 | 2.4 | 3.9 | 4.4 | 3.2 | 1.3 |
| COLLINSVILLE RD, FD | 398 | - | - | - | - | - | - | - | - | - | - | - | - | 5 | - | - | - |
| COLLINSVILLE RD | 662 | 1.7 | 0.91 | 0.69 | 1.6 | 3.2 | 1.9 | 3.1 | 3.3 | 6.9 | 6.3 | 2.4 | 0.6 | 3.3 | 3.7 | 2 | 1.1 |
| COLLINSVILLE RD, FD | 662 | - | - | - | - | - | - | - | - | 6.9 | - | - | - | - | - | - | - |
| MARYLAND AVE | 777 | 2.7 | 10.9 | 11.3 | 1.8 | 8.2 | 10 | 7.7 | 1.6 J | 8.8 J | 8.9 | 2.7 | 2.1 | 7.8 | 9.3 | 3.9 | 2 |
| MARYLAND AVE, FD | 777 | - | - | - | - | - | 9.7 | - | - | - | - | - | 1.6 | - | - | - | - |
| NICHOLS AVE_ID_745 | 745 | 8.6 | 13 | 13.3 | 5.2 | 14.7 | 14 | 6.7 | 1.6 | 16.9 | 17.8 | 6 J | 1.9 | 20.1 | 16.4 | 9.9 | 2.7 |
| NICHOLS AVE_ID_745, FD | 745 | - | - | - | - | - | 14.2 | - | - | - | - | - | - | - | 16.5 | - | - |
| NICHOLS AVE_ID_746 | 746 | 7.9 | 9 | 3.7 | 1.5 | 9.3 | 8.5 | 2 | 0.34 U | 10.4 | 12.2 | 4.3 | 0.69 | 10.1 | 13.2 | 3.8 | 0.64 |
| NICHOLS AVE_ID_746, FD | 746 | - | - | - | - | - | - | - | - | - | 10.8 | - | - | - | - | - | - |
| THOMAS AVE_ID_756 | 756 | 11.1 | 13.8 | 3 | 3.2 | 2.1 | 12.1 | 3 | 1.7 | 15.6 | 11.8 | 4.5 | 2.3 | 20.7 | 15.9 | 10.3 | 3.5 |
| THOMAS AVE_ID_756, FD | 756 | - | - | - | - | - | 12.1 | - | - | 15.2 | - | - | - | - | - | - | - |
| THOMAS ST | 413 | 8.1 | 12.1 | 5.8 | 1.7 | 10.1 | 13.2 | 6.8 | 2.6 | 11.4 | 11.2 | 5.2 | 2.2 | 12 | 15 | 2.1 | 3.8 |
| THOMAS ST, FD | 413 | - | - | - | - | - | - | - | - | 10.6 | - | - | - | 12.2 | - | - | - |

Notes:
 " - inches below ground surface; " - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|--------------|-------|--------|--------|---------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 58TH ST | 440 | 259 | 149 | 324 | 87.9 | 161 | 201 | 108 | 199 | 341 | 643 | 144 | 102 | 33.8 | 106 | 76.4 | 22.9 |
| NORTH 58TH ST, FD | 440 | - | - | - | - | 187 | - | - | - | - | 929 | - | - | - | - | - | - |
| NORTH 59TH ST | 005 | 632 | 89.6 | 65.5 | 18.7 | 345 | 213 | 17.6 | 24.2 | 274 | 290 | 18.4 | 17.3 | 342 | 153 | 25.8 | 16.7 |
| NORTH 59TH ST, FD | 005 | - | - | - | - | - | - | - | 21.5 | - | - | - | - | - | - | - | 18.7 |
| 5 NORTH 57TH ST | 046 | 393 | 221 | 1,150 | 20.5 | 216 | 142 | 97.3 | 24.8 | 145 | 150 | 73.2 | 29.9 | 169 | 122 | 38.1 | 44.4 |
| NORTH 57TH ST, FD | 046 | - | - | - | - | 314 | - | - | - | 124 | - | - | - | - | - | - | - |
| NORTH 31ST ST | 062 | 162 | 155 | 115 | 84.3 | 370 J | 137 | 139 | 75 | 313 | 97 | 213 | 127 | 336 | 217 | 111 | 22.5 |
| NORTH 31ST ST, FD | 062 | - | - | - | - | 292 | - | - | - | - | - | - | - | 320 | - | - | - |
| NORTH 36TH ST | 063 | 380 | 313 | 113 | 82.9 | 625 | 355 | 85 | 213 J | 121 J | 155 | 139 | 117 | 71.4 | 62.3 | 67.5 | 48 |
| NORTH 36TH ST, FD | 063 | - | - | - | - | - | - | - | - | 103 | - | - | - | - | - | - | - |
| NORTH 38TH ST | 869 | 151 | 73.1 | 140 | 52.8 | 282 | 98.2 | 158 | 48.6 | 130 | 142 | 78.8 | 54.6 | 172 | 138 | 120 | 99.2 |
| NORTH 38TH ST, FD | 869 | - | - | - | - | - | - | - | - | 142 | - | - | - | - | 166 | - | - |
| NORTH 32ND ST | 546 | 185 | 261 | 125 | 32.4 | 200 | 312 | 72 | 52 | 61.7 | 65.5 | 68.7 | 111 | 349 J | 797 | 44.1 | 63.1 |
| NORTH 32ND ST, FD | 546 | 185 | - | - | - | - | - | - | - | - | - | - | - | 296 | - | - | - |
| NORTH 32ND ST | 067 | 206 | 99.6 | 316 | 143 | 103 | 88.9 | 92.1 | 68.8 | 100 | 108 | 124 | 59.8 | 207 | 177 | 153 | 46.3 |
| NORTH 32ND ST, FD | 067 | - | - | - | - | - | - | 93 | - | - | - | - | - | - | - | 135 | - |
| NORTH 45TH ST | 844 | 294 | 145 | 23 | 14.3 | 30.8 | 43.9 | 51.5 | 13.7 | 28.2 | 24.4 | 96.9 | 34.5 | 617 | 964 | 54.5 | 17.9 |
| NORTH 45TH ST, FD | 844 | - | - | - | - | - | 42.3 | - | - | 31 | - | - | - | - | - | - | - |
| NORTH 31ST ST | 070 | 113 | 67.1 | 43.6 | 17.3 | 111 | 96.7 | 90 | 20.8 | 464 | 244 | 150 | 110 | 472 | 133 | 71.2 | 56.9 |
| NORTH 31ST ST, FD | 070 | - | - | - | - | - | - | - | - | 577 | - | - | - | - | - | - | - |
| NORTH 34TH ST | 071 | 205 | 169 | 83 J | 68.6 | 161 | 146 | 137 | 140 | 243 | 263 | 131 | 96.2 | 283 | 341 | 104 | 71.7 |
| NORTH 34TH ST, FD | 071 | - | - | 40.6 J | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 076 | 93.5 | 119 | 36 | 25.9 J | 116 | 82.4 | 94 | 14.6 | 194 | 124 | 43.5 | 14.3 | 114 | 156 | 64.7 | 15.1 |
| NORTH 38TH ST, FD | 076 | - | - | - | - | - | - | - | - | - | - | - | - | 122 | - | - | - |
| NORTH 32ND ST | 081 | 262 | 212 | 39.1 | 31.1 | 1,850 | 238 | 46 | 26.5 | 307 | 752 | 76.5 | 55 | 217 | 340 | 69.6 | 25.6 |
| NORTH 32ND ST, FD | 081 | - | - | - | - | - | - | - | - | - | 163 J | - | - | - | - | - | - |
| NORTH 38TH ST | 085 | 87.7 | 58.7 | 89.8 | 80.4 | 49.1 | 45.2 | 90.2 | 47.4 | 63.1 | 43 | 72.9 | 42.6 | 76.2 | 110 | 134 | 19.5 |
| NORTH 38TH ST, FD | 085 | - | - | - | - | - | - | - | - | - | - | - | - | 65.3 | - | - | - |
| NORTH 32ND ST | 087 | 1,020 | 219 | 68.7 | 33.9 | 682 J | 211 | 93.6 | 69.6 | 146 | 151 | 137 | 55.7 | 248 J | 189 | 80.3 | 58.4 |
| NORTH 32ND ST, FD | 087 | - | - | - | - | 1,140 J | - | - | - | - | - | - | - | 238 | - | - | - |
| NORTH 36TH ST | 563 | 300 | 426 | 88.8 | 38.5 | 495 | 1,340 | 403 | 355 | 465 | 227 | 66.1 | 41.3 J | 317 | 171 | 43.5 | 66.6 |
| NORTH 36TH ST, FD | 563 | - | - | - | 34.2 | - | - | - | - | - | - | - | 63.2 J | - | - | - | - |
| NORTH 36TH ST | 097 | 39.4 | 56.8 | 160 | 95.3 | 108 | 276 | 141 | 72 | 65.6 | 76.9 | 80.1 | 127 | 255 | 160 | 47 | 71.4 |
| NORTH 36TH ST, FD | 097 | - | - | 145 | - | - | - | - | - | 89.4 | - | - | - | - | - | - | - |
| NORTH 32ND ST | 098 | 364 J | 364 | 127 | 42.5 | 486 | 227 | 106 | 34 | 368 | 249 | 175 | 23.2 | 232 | 213 | 143 | 101 |
| NORTH 32ND ST, FD | 098 | 428 | - | - | - | - | - | - | - | - | 220 | - | - | - | - | - | - |
| NORTH 34TH ST | 099 | 108 | 128 | 123 | 26.3 | 92.7 | 186 | 94.7 | 27.9 | 191 | 251 | 60.1 | 34.3 | 200 | 184 | 104 | 95.2 |
| NORTH 34TH ST, FD | 099 | - | - | - | - | 124 | - | - | - | - | - | - | - | 204 | - | - | - |
| NORTH 31ST ST | 101 | 190 | 105 | 42.6 | 37.4 | 105 | 119 | 86.5 | 41 | 564 | 322 | 433 | 335 | 368 | 277 | 176 | 132 |
| NORTH 31ST ST, FD | 101 | - | - | - | - | 99.9 | - | - | - | - | 376 | - | - | - | - | - | - |
| NORTH 41ST ST | 843 | 98.9 | 95.5 | 66.9 | 27.9 | 211 | 316 | 739 | 124 | 176 | 172 | 192 | 93.1 | 288 | 500 | 269 | 196 |
| NORTH 41ST ST, FD | 843 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 144 |
| NORTH 34TH ST | 571 | 121 | 162 | 242 | 500 | 119 | 73.1 | 44.1 | 39.8 | 103 | 141 | 46.9 | 67.3 | 150 | 1,070 | 150 | 50.8 |
| NORTH 34TH ST, FD | 571 | 135 | - | - | - | - | 43.4 | - | - | 92.8 | - | - | - | 152 | - | - | - |
| NORTH 31ST ST | 106 | 205 | 191 | 118 | 93 | 223 | 193 | 152 | 171 | 181 | 269 | 87.7 | 44.4 | 165 | 139 | 57.9 | 32.7 |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|--------------|-------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 31ST ST, FD | 106 | - | - | - | - | 248 | - | - | - | - | - | 117 | - | - | - | - | - |
| NORTH 34TH ST | 574 | 83.6 | 110 | 124 | 213 | 107 | 114 | 109 | 69.2 | 80.5 | 97.3 | 55.1 | 47.9 | 99.1 | 72.4 | 40.5 | 18.5 |
| NORTH 34TH ST, FD | 574 | - | - | - | - | 120 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 116 | 25.8 | 37.7 | 31.1 | 116 | 143 | 72.8 J | 59.8 | 84.7 | 94.1 | 110 | 51 | 78.3 | 66 | 143 | 214 | 371 |
| NORTH 38TH ST, FD | 116 | - | - | - | - | 290 J | - | - | - | - | 161 | - | - | - | - | - | - |
| NORTH 36TH ST | 120 | 66.8 | 95.4 | 106 J | 150 | 165 | 313 | 589 | 293 | 87.1 | 80.5 | 47.2 | 47.8 | 163 | 1,320 | 152 | 171 |
| NORTH 36TH ST, FD | 120 | - | - | 159 J | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 44TH ST | 820 | 61.5 | 48.4 | 152 | 320 | 74.5 | 57.6 | 118 | 143 | 125 | 205 | 200 | 369 | 116 | 156 | 479 | 270 |
| ELT AVE | 591 | 174 | 65.9 | 27.2 | 20.1 | 77.9 | 39.4 | 25.5 | 13 | 101 | 41.1 | 18.7 | 14.5 | 90 | 33.9 | 32.4 | 17.2 |
| ELT AVE, FD | 591 | 175 | - | - | - | - | - | 15.6 | - | - | - | - | - | - | - | - | - |
| NORTH 35TH ST | 135 | 318 | 186 | 51 | 70.1 | 237 | 179 | 50.6 | 46.3 | 452 | 486 | 1,020 | 620 | 560 | 866 | 841 | 1,010 |
| NORTH 35TH ST, FD | 135 | - | - | - | - | - | - | - | - | - | - | 515 | - | 478 | - | - | - |
| NORTH 37TH ST | 138 | 89.2 | 121 | 113 | 162 | 121 | 119 | 131 | 99.3 | 298 | 194 | 1,130 | 246 | 127 | 193 | 264 | 270 |
| NORTH 37TH ST, FD | 138 | - | - | - | - | - | - | - | - | - | - | - | - | 167 | 266 | - | - |
| NORTH 40TH ST | 852 | 69.2 | 64.7 | 111 | 77.2 | 70.7 | 86.1 | 67.6 | 50.6 | 69.4 | 80.1 | 83 | 30.9 | 114 | 76.9 | 35.3 J | 18.2 |
| NORTH 40TH ST, FD | 852 | 72.5 | - | - | - | 78.1 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 152 | 63 | 53.7 | 51.1 | 58.6 | 56 | 50.7 | 46.8 | 82.4 | 64.8 | 52.2 | 55.3 | 55.9 | 112 | 103 | 53.6 | 28.3 |
| NORTH 38TH ST, FD | 152 | 56.2 | - | - | - | - | - | - | - | - | - | - | - | 79.9 | - | - | - |
| NORTH 39TH ST | 153 | 49.1 | 83.2 | 49.1 | 23.8 | 86.2 | 122 | 80.8 | 30.8 | 58.2 | 109 | 69.8 | 25.3 | 125 | 151 | 78.2 | 24.2 |
| NORTH 39TH ST, FD | 153 | - | - | - | - | 71.7 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 39TH ST | 157 | 36.8 | 75.8 | 84.8 | 98.5 | 60.5 J | 18.5 | 94.8 | 56 | 80.2 | 92.1 | 82.9 | 34.5 | 68.9 | 72.3 | 70 | 30.4 |
| NORTH 39TH ST, FD | 157 | - | - | 85.9 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 40TH ST | 911 | 145 | 106 | 102 J | 48.5 | 157 | 127 | 51.3 | 28.8 J | 104 | 91.6 | 86.9 | 47.7 | 590 | 206 | 305 | 206 |
| NORTH 40TH ST, FD | 911 | - | - | - | - | - | - | - | - | - | - | - | - | 509 | - | - | - |
| NORTH 44TH ST | 817 | 1,860 | 314 | 54.8 | 21.7 | 341 | 121 J | 35.5 | 20 | 464 | 52.1 | 33.7 | 14.3 | 559 | 271 | 26.5 | 14.3 |
| NORTH 44TH ST, FD | 817 | - | - | - | - | 312 | - | - | - | - | 53.1 | - | - | - | - | - | - |
| NORTH 62ND ST | 165 | 73.2 | 55 | 37.3 | 62.8 J | 38.9 | 32 | 24.8 | 26.6 | 30.2 | 31 | 25.5 | 29 | 30.9 | 41.2 | 22 | 12.8 |
| NORTH 62ND ST, FD | 165 | - | - | - | 32.8 J | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 166 | 73.8 | 83.4 | 39 | 16.1 | 197 | 164 | 78.9 | 33.3 | 74.1 | 45.2 | 35 | 48.7 | 35.4 | 40.4 | 36 | 23.2 J |
| NORTH 62ND ST, FD | 166 | - | 69.5 | - | - | - | - | - | - | - | - | - | - | - | - | 40.8 J | 39.2 |
| NORTH 62ND ST | 600 | 122 | 29.3 | 30.2 | 12.9 J | 33.2 | 35.2 | 11 | 11.1 | 30.9 | 31.3 | 15.1 | 12.5 | 31.7 | 30 | 17.9 | 10.7 |
| NORTH 62ND ST, FD | 600 | - | - | - | - | - | - | - | - | 34.2 | - | - | - | - | - | 18.4 | - |
| 2913 NORTH 61ST | 171 | 33.7 | 31.7 | 28.9 | 9.5 | 27.4 | 31.4 | 11.9 | 10.2 | 25.6 | 34.4 J | 30.7 | 10.5 | 28.1 | 31 | 22.1 | 10.5 |
| 2913 NORTH 61ST, FD | 171 | - | 28.6 | - | - | - | - | - | - | - | - | - | - | - | 30.1 | - | - |
| NORTH 61ST ST | 174 | 39.1 | 35.4 | 26.3 | 19.5 | 33.8 | 28 | 33.7 | 30.5 | 23.8 | 26.3 | 27.5 | 23.4 | 35.8 | 31.1 | 35.3 | 18.9 |
| NORTH 61ST ST, FD | 174 | - | - | - | - | - | - | - | - | 23 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 176 | 32 | 39.8 | 45.6 | 38.1 | 50.5 | 52.2 | 37.7 | 33.1 | 32.5 | 52.8 | 60.9 | 38.7 | 34 | 50.8 | 44.3 | 41.6 |
| NORTH 61ST ST, FD | 176 | 38.1 | - | - | - | - | - | - | - | - | - | - | - | 26 | - | - | - |
| 2920 NORTH 61ST | 177 | 38.8 | 39.7 | 26.7 | 33.3 | 37.9 J | 37.5 | 15.9 | 15.5 | 35.9 | 36.3 | 34 | 16.8 | 42.1 | 26.8 | 23.2 | 19.8 |
| NORTH 61ST ST | 180 | 45.8 | 54.3 | 53.5 | 43.6 | 64.4 | 59.4 | 61.2 | 44.9 | 84.3 | 126 | 55 | 41.7 | 60.2 | 49.4 | 30.8 | 49.2 |
| NORTH 61ST ST, FD | 180 | - | - | - | - | - | 57.5 | - | - | - | - | - | - | 49.1 | - | - | - |
| NORTH 61ST ST | 181 | 38 | 39.7 | 39.7 | 28.7 | 47.2 | 38.8 | 37 | 34.9 | 34.9 | 26.8 | 31 | 30.5 | 30.2 | 32.9 | 41 | 19.1 |
| NORTH 61ST ST | 183 | 35.7 | 33.8 | 40 | 40.2 | 21.8 | 16.9 | 35.7 | 44.8 | 30.2 | 27.1 | 33 | 32.4 | 42.9 | 46.1 | 43.5 | 22.5 |
| NORTH 61ST ST | 184 | 54.6 | 30.9 | 48.4 | 44.3 | 15.1 | 24.1 | 40.1 | 34.5 | 21.3 | 18.2 | 27.2 | 41.5 | 28.8 | 37.4 | 46.2 | 35.1 |
| NORTH 61ST ST, FD | 184 | - | - | - | - | - | 30.5 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 186 | 53.2 | 68.8 | 29.3 | 14.9 | 81.2 | 49.4 | 30.9 | 17.1 | 51.4 | 53.9 | 41.6 | 17.8 | 55.3 | 50.1 | 19.7 | 22.8 |
| NORTH 60TH ST, FD | 186 | 52.4 | - | - | - | - | - | - | - | - | - | - | - | - | 25.9 | - | - |
| NORTH 61ST ST | 187 | 18.9 | 32.4 | 39.2 | 24.7 | 10.3 | 40 | 39.3 | 22.4 | 25.6 | 34.5 | 29.3 | 11.8 | - | - | - | - |
| NORTH 61ST ST, FD | 187 | - | - | - | - | - | - | - | 24.8 | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 188 | 48.9 J | 48.7 | 37.7 | 38.7 | 29.9 | 26.7 | 37.9 | 36.4 | 30.2 | 34.4 | 30.7 | 20.5 | 32.1 | 33.8 | 33.7 | 26.4 |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|--------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 61ST ST, FD | 188 | - | - | - | - | - | - | - | - | 36.9 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 190 | 51.3 | 50.1 | 35.4 | 19.6 | 62.2 | 78.1 | 26.9 | 15.5 | 9.8 | 59.3 | 70.2 | 39.1 | 35.4 | 41 | 50.4 | 22.7 |
| NORTH 62ND ST, FD | 190 | - | - | - | - | - | - | - | - | 54.5 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 191 | 23.5 | 23.6 | 22.5 | 17.8 | 18.8 | 21.6 | 40.9 | 43.9 | 23.2 | 36.7 | 38.6 | 25 | 46.7 | 35.8 | 31.1 | 25 |
| NORTH 62ND ST, FD | 191 | - | - | - | - | - | - | - | - | - | 33 | - | - | - | 42.8 | - | - |
| NORTH 62ND ST | 192 | 28 | 53 | 24.8 | 26.8 | 31.6 | 38.7 | 26.6 | 25.9 | 21.5 | 18.4 | 25.1 | 23.7 | 54.7 | 29.3 | 20.3 | 17 |
| NORTH 62ND ST, FD | 192 | - | - | - | - | 19.9 | - | - | - | - | - | - | - | - | - | 22.9 | - |
| NORTH 63RD ST | 193 | 69.9 | 62.9 | 60.9 | 41.3 | 63.1 | 65 | 53.5 | 50.2 | 34.1 | 31.3 J | 27.5 | 52.3 | 39.7 | 49.6 | 47.9 | 32.6 |
| NORTH 63RD ST, FD | 193 | - | - | - | - | 60.2 | - | - | - | - | - | - | - | 40.7 | - | - | - |
| NORTH 62ND ST | 194 | 31 | 20.9 | 17.9 | 22.1 | 21.4 | 22.1 | 26.2 | 33.9 | 27.2 | 32.2 | 36.5 | 31.3 | 36.3 | 37.4 | 26.6 | 15.4 |
| NORTH 62ND ST, FD | 194 | - | - | - | 16 | 21.8 | - | - | - | - | 33.5 | - | - | - | - | - | - |
| NORTH 62ND ST | 195 | 30.7 | 48.9 | 29.2 | 27.2 | 33.7 | 49.9 | 30.3 | 18.3 | 42.1 | 35.9 | 12.3 | 11.9 | 36.7 | 35 | 23.3 | 13 |
| NORTH 62ND ST, FD | 195 | - | - | - | - | - | - | - | - | - | 38.2 | - | - | - | - | - | - |
| NORTH 63RD ST | 196 | 17.5 | 11.5 | 9.1 | 18.9 | 58.5 | 13.6 J | 38.9 | 43.1 | 19.3 | 28.1 | 29.5 | 33.2 | 58.8 | 37.4 | 24.8 | 16.6 |
| NORTH 63RD ST, FD | 196 | - | - | - | - | - | - | - | - | - | - | 30 | - | - | - | - | - |
| NORTH 62ND ST | 197 | 27.3 | 18.1 | 21 | 37.4 | 32.6 | 35.2 | 25.2 | 21.5 | 34.8 | 35.9 | 38 | 29 | 48 | 72.6 | 41.7 | 27.4 |
| NORTH 62ND ST, FD | 197 | - | 13.7 | - | - | - | - | - | - | - | - | - | - | - | 61.4 | - | - |
| NORTH 62ND ST | 199 | 23.2 | 22.6 | 14.7 | 36.3 | 52.4 | 22.9 | 161 | 75.1 | 65.8 | 48.9 | 83 | 47.4 | 24.6 | 26.9 J | 31.5 | 35 |
| NORTH 62ND ST, FD | 199 | 22.5 | - | - | - | - | - | - | 68.5 | - | - | - | - | - | 44.1 J | - | - |
| NORTH 62ND ST | 202 | 28.9 | 25.6 | 30.2 | 15.1 | 32.6 | 30.9 | 26.4 | 26 | 26.3 | 21.8 | 36 | 38.1 | 45.6 | 35.2 | 34.9 | 29.2 |
| NORTH 62ND ST, FD | 202 | - | 26.3 | - | - | - | - | - | - | 24.7 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 204 | 32.2 | 29.9 | 28.2 | 19.3 | 29.6 | 50.4 | 33 | 38 | 310 | 147 | 67.4 | 67 | 336 | 345 | 173 | 65.4 |
| NORTH 62ND ST, FD | 204 | - | - | - | - | - | - | - | - | - | - | - | - | - | 241 | - | - |
| NORTH 63RD ST | 206 | 32.3 | 32.8 | 24.7 | 13.9 | 36.9 | 27.5 | 27.5 J | 14.6 | 41.2 | 42.4 | 31.6 | 15.4 | 29.7 | 26.5 | 20.2 | 25.6 |
| NORTH 63RD ST, FD | 206 | - | 32.5 | - | - | - | - | - | - | - | - | - | - | - | - | 23.3 | - |
| NORTH 63RD ST | 207 | 41 | 35.2 | 17.6 | 16.2 | 37.2 J | 21.7 J | 32 J | 19.2 J | 68.8 J | 27.3 J | 23 J | 16.1 J | 47.8 | 34.1 J | 17.9 | 14 |
| NORTH 63RD ST, FD | 207 | - | 35.3 | - | - | - | - | - | - | - | 29 J | - | - | - | - | - | - |
| NORTH 62ND ST | 209 | 36.6 | 31.9 | 32.9 | 29.6 | 34.6 | 37.4 | 36.6 | 20.3 | 21 | 24.2 | 36.4 | 24.3 | 28.5 | 26.1 | 27.3 | 21.8 |
| NORTH 62ND ST, FD | 209 | 38.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 18.7 |
| NORTH 62ND ST | 210 | 27.6 | 23.2 | 20.8 | 31.1 | 41 | 21.7 | 29.1 | 20.3 | 35 | 21 | 37.3 | 33.2 | 39.6 | 43.8 | 31.8 | 26.1 |
| NORTH 62ND ST, FD | 210 | - | - | - | - | - | 34 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 212 | 34.9 | 40 | 26.4 | 17 | 38.5 | 43.2 | 24.9 | 22.4 | 54.3 | 37.2 | 26.5 | 12.7 | 35 | 37.1 | 19.7 | 12.2 |
| NORTH 62ND ST, FD | 212 | - | - | - | - | 38.5 | - | - | - | - | - | - | - | - | - | 23.1 | - |
| NORTH 62ND ST | 215 | 49.9 | 24.8 | 38.9 | 68.8 | 226 | 51.9 | 48.3 | 44.5 | 65.8 | 34.3 | 48.6 | 32.2 | 46.9 | 20.5 | 41.8 | 28.8 |
| NORTH 62ND ST, FD | 215 | - | - | - | - | 350 | - | - | - | - | - | - | 43.4 | - | - | - | - |
| NORTH 63RD ST | 217 | 46.2 | 39.5 | 21.8 | 14.3 | 58.9 | 35.8 | 27.8 | 15.2 | 38.7 | 40.9 J | 20.7 | 17.8 | 42.7 | 31.5 | 16.8 | 15.2 |
| NORTH 63RD ST, FD | 217 | - | - | - | - | 51.2 | - | - | - | - | - | - | - | - | - | 15.4 | - |
| NORTH 60TH ST | 222 | 39.7 | 50.7 | 64.4 | 49.7 | 28.7 | 31.6 | 49.7 | 40.4 | 34.6 | 33.7 J | 253 | 81.4 | - | - | - | - |
| NORTH 60TH ST, FD | 222 | - | - | - | - | 25.7 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 224 | 66.1 | 62 | 22.8 | 22.9 | 69.2 | 72.6 | 34.1 | 23.7 | 57.1 | 53 | 39.7 | 16.8 | 67.2 | 49.6 | 40.9 | 24.1 |
| NORTH 61ST ST, FD | 224 | - | - | - | - | - | - | - | - | - | - | 38.1 | - | - | - | - | - |
| NORTH 62ND ST | 225 | 34.5 | 32.6 | 55 | 34.5 | 35.7 | 28.4 | 36.2 | 36.6 | 28.7 | 30.7 | 39.2 | 22.3 | 50.3 | 45.5 | 34.2 | 25.5 |
| NORTH 62ND ST, FD | 225 | 36.2 | - | - | - | 22.6 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 605 | 48.4 | 54.5 | 48.3 | 22.9 | 34.6 | 41 | 40.6 | 20.4 | 19.4 | 21.2 | 71.1 | 55.5 | 28 | 44.9 | 44 | 42.5 |
| NORTH 60TH ST, FD | 605 | - | - | - | - | 32.5 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 229 | 43.3 | 38 | 25.8 | 19.4 | 34.7 | 50.1 | 26.6 | 23.1 | 50.5 | 52.5 | 40.3 | 18.1 | 43.2 | 41.5 | 39.5 | 23.9 |
| NORTH 61ST ST, FD | 229 | - | 34.5 | - | - | 39 | - | - | - | - | - | - | - | 49.5 | - | - | - |
| NORTH 62ND ST | 232 | 55.4 | 187 | 80.2 | 71.6 J | 20.4 | 12.8 | 29.8 | 56.2 | 28.3 | 37.5 | 39.8 | 21.1 | 39.5 | 32.2 | 32.7 | 21.1 |
| NORTH 62ND ST, FD | 232 | - | - | - | 127 J | - | - | - | - | - | - | - | - | 41.7 | - | - | - |
| NORTH 63RD ST | 233 | 40.6 | 48.6 | 21.3 | 18.6 | 49.4 | 39.4 | 22.6 | 14.5 | 38.8 | 37.1 | 18 | 32.4 | 30.9 | 36.1 | 21.2 | 13.4 |

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|-------------------|-------------|--------------|-------|--------|--------|------|--------|--------|--------|--------|-------|--------|--------|------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 63RD ST, FD | 233 | - | - | - | - | - | 33.4 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 234 | 54.6 | 45.5 | 40.7 | 42 | 77 | 58.4 J | 32.1 | 27.7 | 66.8 | 57.2 | 43.9 | 23.2 | 65.1 | 50.1 | 22.3 | 26.4 |
| NORTH 60TH ST, FD | 234 | - | - | - | - | - | - | - | - | - | - | - | - | 58.4 | - | - | - |
| NORTH 60TH ST | 235 | 45.9 | 42.5 | 31.3 | 22.8 | 37.5 | 37.9 | 39.3 | 22.6 | 46.2 | 48.3 | 34.8 | 25.3 | 56.6 | 45.2 | 24.4 | 30.4 |
| NORTH 60TH ST, FD | 235 | - | - | - | - | - | 36 | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 237 | 28.8 | 37.7 | 40.5 | 30.4 | 56.8 | 37.1 | 46.3 | 37.5 | 75.7 | 65.8 | 30 | 21.5 | 305 | 40.8 | 36.9 | 32.5 |
| NORTH 60TH ST, FD | 237 | - | - | 40.6 | - | - | - | - | - | - | - | - | - | 69.1 | - | - | - |
| N 61ST ST | 241 | 57.1 | 43.8 | 23.5 | 21.6 | 58 | 88.3 | 31.9 | 36.9 | 136 | 106 | 42.6 | 29.9 | 55.5 | 97.5 | 43.5 | 26.9 |
| N 61ST ST, FD | 241 | 57.4 | - | - | - | - | 61.7 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 243 | 53 | 33.9 | 25.6 | 19.8 | 44.6 | 34.4 | 17.2 | 15.9 J | 26.6 | 31 | 29.7 | 19.2 | 40.6 | 40.5 | 25 | 17.3 |
| NORTH 61ST ST, FD | 243 | 55.1 | - | - | - | - | - | - | - | - | 30 | - | - | - | - | - | - |
| NORTH 62ND ST | 246 | 51.1 | 52.8 | 32.5 | 17.7 | 65.1 | 54.1 | 36 | 19.4 | 55.5 | 53.1 | 31 | 19.1 | 103 | 42.4 | 29.9 | 18.4 |
| NORTH 62ND ST, FD | 246 | 63.3 | - | - | - | - | 54.3 | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 252 | 51.6 | 34.5 | 32.3 | 21.6 | 45.6 | 37.6 | 30.9 | 17.5 | 36.2 | 45.6 | 35.3 | 14.4 | 52.9 | 48.3 | 32 | 20.5 |
| NORTH 61ST ST, FD | 252 | - | - | - | - | - | - | - | 17 | - | - | - | - | 60.3 | - | - | - |
| NORTH 61ST ST | 608 | 62.8 | 48.5 | 21.3 | 19.4 | 74.8 | 59.1 | 29.6 | 20.2 | 61.9 | 47.3 | 39.5 | 16.9 | 128 | 59.8 | 41.2 | 18.4 |
| NORTH 61ST ST, FD | 608 | 55.9 | - | - | - | - | - | - | - | 61.5 | - | - | - | - | - | - | - |
| NORTH 62ND ST | 257 | 39.9 | 51.9 | 60.7 | 57.1 | 21.1 | 30.7 | 51.9 | 44.4 | 33.6 | 42.6 | 42.6 | 35.9 | 32.7 | 34.2 | 28.5 | 17.3 |
| NORTH 62ND ST, FD | 257 | - | - | - | - | 21.4 | - | - | - | - | - | - | - | - | 39.8 | - | - |
| NORTH 62ND ST | 259 | 25.9 | 38.8 | 51.5 | 34.5 | 27.8 | 41.3 | 45.9 | 37.2 | 20.1 | 42.4 | 52.8 | 35.3 | 30.6 | 42.4 J | 45.1 J | 20.2 J |
| NORTH 62ND ST, FD | 259 | - | - | - | - | - | - | - | - | - | 24.4 | - | - | - | - | - | - |
| NORTH 61ST ST | 263 | 56.9 | 64.7 | 60.4 | 27.1 | 58.1 | 73.7 | 46.5 | 27.5 | 40.9 | 56.4 | 47.2 | 40.4 | 64.8 | 29.7 J | 38.2 | 17.4 |
| NORTH 61ST ST, FD | 263 | - | - | - | - | 49.9 | - | - | - | - | - | - | - | - | 48.9 J | - | - |
| NORTH 61ST ST | 266 | 59.7 | 59.5 | 51.5 | 31.1 | 70.7 | 49.9 | 35.7 | 45 | 68.5 | 73 | 36.2 | 35.5 | 52.6 | 46.2 | 24.5 | 37.1 |
| NORTH 61ST ST, FD | 266 | - | - | - | - | 70.9 | - | - | - | 70.5 | - | - | - | - | - | - | - |
| NORTH 61ST ST | 268 | 69.1 | 51.9 | 29.6 | 27.2 | 73.9 | 81.4 | 35.9 | 32 | 41.5 | 52.4 | 24.6 | 25 | 61 | 64.5 | 38.2 | 39 |
| NORTH 61ST ST, FD | 268 | - | - | - | - | - | - | - | - | 66.8 | - | - | - | - | - | - | - |
| NORTH 63RD ST | 270 | 71.2 | 49.1 | 33 | 23.8 | 56.9 | 53.1 | 37.3 | 17.2 | 47.4 J | 46.3 | 32.1 | 19.3 | 195 | 51.8 | 30.5 | 31.5 |
| NORTH 63RD ST, FD | 270 | - | - | 39.3 | - | - | - | - | - | - | - | - | - | - | - | - | 56.9 |
| NORTH 61ST ST | 274 | 65.1 | 60.5 | 50.4 | 25.1 | 61.1 | 57.7 | 67.9 | 23.4 | 71.1 | 57 | 30.8 | 33.9 | 71.4 | 62.7 | 33.8 | 25.7 |
| NORTH 61ST ST, FD | 274 | - | - | - | - | 55.1 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 59TH ST | 276 | 37.4 | 39.8 | 17.1 | 14.6 | 61.9 | 44.2 | 14.4 | 15.7 | 56.8 | 49.8 | 19.2 | 29.6 | 39.3 | 37.2 | 18 | 12.4 |
| NORTH 59TH ST, FD | 276 | - | 36.5 | - | - | - | - | - | - | 63.6 | - | - | - | - | 44.9 | - | - |
| NORTH 61ST ST | 279 | 70.1 | 54.4 | 53.5 | 27.4 | 88.4 | 54.8 | 40.5 | 28 | 72.6 | 74 | 35.4 | 25.3 | 79.7 | 69.3 | 33.1 | 16.9 |
| NORTH 61ST ST, FD | 279 | - | 67.4 | - | - | - | - | - | - | - | - | - | - | - | 35.6 | - | - |
| NORTH 60TH ST | 290 | 39.4 | 46.9 | 45.2 | 40.6 | 31.1 | 34.5 | 40.1 | 33.5 | 33.2 | 37.7 | 30.9 | 21 | 28.4 | 30.6 | 29.9 | 18.2 |
| NORTH 60TH ST, FD | 290 | - | - | - | - | 36.4 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 292 | 44.1 | 33.7 | 46.2 | 34.6 | 50.7 | 46 | 47.3 | 45.7 | 59.2 | 53.8 | 45.2 | 20.8 | 43.8 | 39.3 | 20.2 | 12.4 |
| NORTH 60TH ST, FD | 292 | - | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 297 | 33.9 | 37.5 | 48.1 | 32.8 | 74.3 | 71.4 | 37.6 | 64.2 | 70.4 | 130 | 46.9 | 41 | 79 | 93.4 | 28.2 | 35.3 |
| NORTH 62ND ST, FD | 297 | 32.5 | 38.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 299 | 111 | 100 | 63.6 | 31 | 65.2 | 78.4 | 43.7 | 42.9 | 95.2 | 107 | 150 | 81.1 | 85.7 | 76.5 | 254 | 191 |
| NORTH 62ND ST, FD | 299 | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 766 | - | 834 | 196 | 631 | 808 | 617 | 596 | 486 | 504 | 193 | 246 | 759 | 429 | 935 | 738 | 223 |
| MAPLE AVE, FD | 766 | 178 | - | - | - | - | - | - | - | - | - | - | - | 394 | - | - | - |
| MAPLE AVE | 767 | 269 | 596 | 504 | 479 | 279 | 1,470 | 435 | 658 | 398 | 299 | 865 | 159 J | 379 | 341 | 688 | 773 |
| MAPLE AVE, FD | 767 | 224 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 309 | 247 | 183 | 180 | 99.6 | 412 | 1,520 | 28.7 | 19.9 | 524 | 777 | 86.4 | 138 | 363 | 169 | 125 | 35.6 |
| MAPLE AVE, FD | 309 | 240 | - | - | - | 331 | - | - | - | - | - | - | - | - | 133 | - | - |
| MAPLE AVE | 310 | 116 | 62.1 | 62.7 | 29.3 | 106 | 85.3 | 73.1 | 89.9 | 75 | 95 | 121 | 135 | 270 | 121 | 358 | 63.8 |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|---------------------|-------------|--------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| MAPLE AVE, FD | 310 | - | - | - | - | - | - | - | - | 99 | - | - | - | - | - | - | - |
| MAPLE AVE | 618 | 170 | 174 | 107 | 94.3 | 328 | 1,270 | 191 | 100 | 216 | 342 | 111 | 142 | 342 | 810 | 264 | 94.2 |
| MAPLE AVE, FD | 618 | 239 | - | - | - | - | 1,340 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 312 | 56.3 | 71.2 | 14.8 | 32.8 | 115 | 54.5 | 47.5 | 18.6 | 106 | 75.7 | 42.2 | 55.4 | 103 | 138 | 70.4 | 28.2 |
| NORTH 62ND ST, FD | 312 | - | - | - | - | 106 | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 619 | 244 | 316 | 734 | 248 | 217 | 226 | 407 J | 165 J | 321 J | 345 J | 430 J | 374 J | 306 J | 269 J | 218 J | 267 J |
| MAPLE AVE, FD | 619 | - | - | - | - | - | - | - | - | - | - | - | - | 328 J | 273 J | - | - |
| MAPLE AVE | 317 | 170 | 308 | 204 | 112 | 191 | 380 | 262 | 155 | 192 | 310 | 205 | 117 | 346 | 392 | 435 | 519 |
| MAPLE AVE, FD | 317 | - | - | - | - | - | - | - | - | 167 | 224 | - | - | - | - | - | - |
| NORTH 62ND ST | 319 | 63.2 | 61 | 36.9 | 33 | 73 J | 65.5 | 51.2 | 31.8 | 47.1 | 48 | 31.4 | 27.1 | 55 | 49.4 | 32.2 | 22 |
| NORTH 62ND ST, FD | 319 | - | - | - | - | - | 62.5 | - | - | - | - | - | - | - | - | 23.6 | - |
| NORTH 62ND ST | 320 | 77.8 | 50.4 | 29 | 21.5 | 81.6 | 62.6 | 38.1 | 54.9 | 93.1 | 72.9 | 78.4 | 27.3 | 137 | 120 | 57.8 | 21.1 |
| NORTH 62ND ST, FD | 320 | 74 | - | - | - | - | - | - | - | - | - | - | - | 136 | - | - | - |
| MAPLE AVE | 323 | 216 | 185 | 173 | 98.9 | 166 | 165 | 199 | 240 | 110 | 110 | 95 | 56.9 | 155 | 226 | 244 | 221 |
| MAPLE AVE, FD | 323 | - | 190 | - | 83.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 324 | 255 | 79.2 | 603 | 416 | 103 J | 204 | 248 | 72.3 | 161 | 801 | 124 | 198 | 313 | 991 | 429 | 377 |
| MAPLE AVE, FD | 324 | - | - | 463 | 253 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 325 | 183 | 125 | 90.6 | 405 | 103 | 120 | 86.4 | 223 | 108 | 108 J | 218 | 159 | 169 | 170 | 570 | 148 |
| MAPLE AVE, FD | 325 | - | - | - | - | - | - | 308 | 107 | - | - | - | - | - | - | - | - |
| MAPLE AVE | 326 | 376 | 235 | 400 | 1,270 | 227 | 1,900 | 1,710 | 670 | 339 | 564 | 402 | 219 | 181 | 525 | 656 | 416 |
| MAPLE AVE, FD | 326 | - | - | - | - | 202 | 3,100 | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 859 | 79.6 | 54.7 | 115 | 1,130 | 80.3 | 31.3 | 38.4 | 150 | 47.4 | 25.1 | 27.4 | 17.9 | 77.5 | 99.6 | 148 | 242 |
| MAPLE AVE, FD | 859 | - | - | - | - | 133 | - | - | - | 71.6 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 329 | 171 | 66.6 | 63.5 | 105 | 81.3 | 32.1 | 68.2 | 817 J | 62.1 | 54 | 396 | 306 | 72.6 | 39.8 | 95.6 | 219 |
| COLLINSVILLE RD, FD | 329 | - | - | - | - | - | - | 298 J | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 330 | 155 J | 233 J | 80.9 J | 26.6 J | 88.8 J | 107 J | 27.7 J | 14.6 | 63.5 | 58.9 | 115 | 71.4 | 109 | 69.9 | 80.9 | 16.7 |
| COOKSON RD, FD | 330 | - | - | - | - | - | - | - | 63.3 | - | - | - | - | - | - | - | - |
| MAPLE AVE | 910 | 80.4 | 113 | 74.1 | 42 | 60.6 | 35.9 J | 175 J | 261 J | 27.2 J | 38.1 J | 271 J | 449 J | 196 J | 365 J | 265 J | 67.6 J |
| MAPLE AVE, FD | 910 | - | - | - | - | 58.9 | - | - | - | - | - | - | - | 216 J | - | - | - |
| COLLINSVILLE RD | 866 | 50.5 | 66.8 | 42.8 | 21 | 107 J | 108 | 53.1 | 19.7 | 119 | 110 | 120 | 27.9 | 114 | 71.9 | 41.4 | 21 |
| COLLINSVILLE RD, FD | 866 | - | - | - | - | - | - | 24.3 | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 909 | 140 | 82.6 | 51 | 30.1 | 94.6 | 62.8 | 35 | 19.8 | 68.1 | 55.2 | 27 | 19.1 | - | - | - | - |
| COLLINSVILLE RD, FD | 909 | - | - | - | - | - | - | - | 56.7 | - | - | - | - | - | - | - | - |
| LOCUST ST | 908 | 1,110 | 242 | 133 | 248 | 213 | 541 J | 333 | 148 | 172 | 317 | 70.9 | 58.7 | 483 | 434 | 314 | 87 |
| LOCUST ST, FD | 908 | - | - | - | - | - | 607 | - | - | - | - | - | - | 658 | - | - | - |
| COOKSON RD | 846 | 97.6 | 297 | 54.1 | 181 | 266 | 201 J | 490 | 4,710 | 283 | 51.7 | 62 | 11.3 | 475 | 203 | 100 | 23.6 |
| COOKSON RD, FD | 846 | - | - | - | - | - | 123 J | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 821 | 155 | 131 | 46.6 | 72.1 | 161 J | 107 | 62.3 | 37.8 | 588 | 234 | 67.1 | 30.4 | 73 | 137 J | 141 | 50.4 |
| COOKSON RD, FD | 821 | - | - | - | - | 207 | - | - | - | - | - | - | - | 290 J | - | - | - |
| COLLINSVILLE RD | 811 | 30.2 | 29.3 | 61.5 | 23 | 37.3 | 26 | 72.6 | 39.4 | 47 | 204 | 118 | 145 | 24.9 | 110 | 52.8 | 14.9 |
| COLLINSVILLE RD, FD | 811 | - | - | - | - | 42.6 | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 819 | 46.4 | 188 | 676 | 213 | 29.1 | 16.8 | 241 J | 69.5 | 50.3 | 23.3 | 144 | 1,590 | 57.4 | 106 | 120 | 125 |
| COOKSON RD, FD | 819 | - | - | - | - | - | 638 J | - | - | - | - | - | - | - | 169 | - | - |
| COOKSON RD | 812 | 39.3 | 80.6 | 123 | 201 | 59.6 | 78.6 | 180 | 51.1 | 66.7 | 70.7 | 117 | 26.5 | 56.4 | 91.9 J | 247 | 88.1 |
| COOKSON RD, FD | 812 | - | - | - | - | - | - | - | - | - | - | - | - | 98 | - | - | - |
| COLLINSVILLE RD | 825 | 93.3 | 33.7 | 24.9 | 19.4 | 213 | 187 | 404 | 22.5 | 116 | 127 | 118 | 204 | 91.6 | 75.2 | 220 | 1,740 |
| COLLINSVILLE RD | 845 | 482 | 94.8 | 35.2 | 22.4 | 417 | 88.6 | 35.3 | 20.4 | 615 | 71.1 | 28 | 26.4 | 326 | 95.5 | 22.7 | 19.9 |
| COLLINSVILLE RD, FD | 845 | - | - | - | - | 425 | - | - | - | - | - | - | - | 86.7 | - | - | - |
| DELMAR AVE | 352 | 138 | 58 | 37.8 | 28.2 | 137 | 87.6 | 36.9 | 32.5 | 48 | 185 | 102 | 60.5 | 157 | 102 | 68.9 | 25.4 |
| DELMAR AVE, FD | 352 | - | - | - | - | - | - | - | - | - | - | - | - | 170 | - | - | - |

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|------------------------|-------------|--------------|-------|--------|--------|------|-------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| KINDER DR | 769 | 170 | 109 | 32.4 | 13.9 | 131 | 76.1 | 23.6 | 21.2 J | 170 | 39.9 | 20.7 | 17.1 | 150 | 57.7 | 18.4 | 20 |
| KINDER DR, FD | 769 | - | - | - | - | - | 85.6 | - | - | - | - | - | - | - | - | - | - |
| THOMAS AVE | 827 | 108 | 236 | 32.8 | 76.7 | 137 | 48.9 | 16.7 | 16.2 | 86.6 | 51.1 | 28 | 20.4 | 77.1 J | 86.5 | 14.6 | 17.6 |
| THOMAS AVE, FD | 827 | - | - | - | - | - | 36.9 | - | - | - | - | - | - | 748 J | - | - | - |
| THOMAS AVE | 900 | 82.8 | 57.7 | 34.4 | 10.2 | 65.2 | 34.7 | 40.2 | 66.2 | 119 | 65.5 | 18.2 | 12.1 | 104 | 52.5 | 20.8 | 15.6 |
| THOMAS AVE, FD | 900 | - | - | - | - | 66.8 | - | 43.5 | - | - | - | - | - | 105 | - | - | - |
| KINDER DR | 367 | 161 | 92.1 | 56 | 44.2 | 137 | 71.4 | 63.3 | 46.4 | 112 | 67.2 | 29.7 | 18.5 | 141 | 107 | 60.4 | 29.7 |
| KINDER DR, FD | 367 | - | - | - | - | - | - | - | - | 117 | - | - | - | - | - | 31.2 | - |
| MARYLAND AVE | 653 | 84.1 | 30.3 | 26.2 | 17.5 | 102 | 113 | 26.4 | 19.9 | 171 | 196 | 269 | 77 | 132 | 163 | 228 | 86.5 |
| MARYLAND AVE, FD | 653 | 85.8 | - | - | - | 137 | - | - | - | - | - | - | - | - | - | - | - |
| KINDER DR | 378 | 73.1 | 105 | 113 | 43.9 | 79.2 | 110 | 372 | 87.8 | 119 | 150 | 108 | 103 | 268 | 210 | 283 | 161 |
| KINDER DR, FD | 378 | - | - | - | - | - | - | - | - | - | - | - | - | 240 | - | - | - |
| MARYLAND AVE | 384 | 65.3 | 73 | 321 | 386 | 164 | 107 | 80.8 | 86.2 | 286 | 214 | 206 | 162 | 58.6 | 48.2 | 108 | 89.5 |
| MARYLAND AVE, FD | 384 | - | - | - | - | - | - | - | - | 245 | - | - | - | - | 58.5 | - | - |
| COLLINSVILLE RD | 388 | 283 | 205 | 55.3 | 141 | 80.7 | 35.8 | 16.1 | 16.9 | 287 | 324 | 140 | 77.8 | 215 | 275 | 242 | 74.2 |
| COLLINSVILLE RD, FD | 388 | - | - | - | - | - | - | - | - | 373 | - | - | - | - | - | - | - |
| HILL AVE | 660 | 61.9 | 52.3 | 81.1 | 19.3 | 40 | 45.1 | 102 | 28.5 | 88.4 | 31.2 | 17.6 | 15.2 | 171 | 157 | 31.9 | 20.8 |
| HILL AVE, FD | 660 | - | - | - | - | 54 | - | - | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 389 | 211 | 128 | 63.3 | 98.7 | 198 | 171 | 181 | 79.5 | 98.1 | 106 | 120 | 59.7 | 109 | 83.9 | 129 | 140 |
| COLLINSVILLE RD, FD | 389 | - | - | - | - | - | - | - | - | 130 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 392 | 333 | 187 | 209 | 39.5 | 105 | 101 | 160 | 74.1 | 160 | 164 | 70.7 | 384 | 198 | 123 | 67.6 | 245 |
| COLLINSVILLE RD, FD | 392 | - | 338 J | - | - | - | - | - | - | - | 74.3 | - | - | - | - | - | - |
| COLLINSVILLE RD | 395 | 93.1 | 83.8 | 39.9 | 16.2 | 97.8 | 73.5 | 34.1 | 32.6 | 72.9 | 60.4 | 35.1 | 1.2 U | 68 | 61.6 | 28 | 21.6 |
| COLLINSVILLE RD, FD | 395 | - | - | - | - | - | 46 | - | - | - | - | - | - | - | 56.8 | - | - |
| COLLINSVILLE RD | 396 | 95.8 | 80.8 | 52.8 | 17.8 | 63.7 | 60.2 | 52.3 | 21.5 | 60 | 43.2 | 27.9 | 23.6 | 68.8 | 60.2 | 43.7 | 27.4 |
| COLLINSVILLE RD, FD | 396 | - | - | - | - | - | - | - | - | - | - | - | - | - | 59.6 | - | - |
| COLLINSVILLE RD | 398 | 154 | 54.9 | 29.2 | 36.8 | 87.6 | 63.5 | 47.3 | 43.5 | 80.9 | 102 | 126 | 99.4 | 106 | 98.5 | 91 | 54.8 |
| COLLINSVILLE RD, FD | 398 | - | - | - | - | - | - | - | - | - | - | - | - | - | 103 | - | - |
| COLLINSVILLE RD | 662 | 53.5 | 20.7 | 14.8 | 49.2 | 59.6 | 33.5 | 36.3 | 57.8 | 95.8 | 104 | 65.8 | 28.9 | 87.4 | 84.5 J | 44.3 | 33.1 |
| COLLINSVILLE RD, FD | 662 | - | - | - | - | - | - | - | - | 99.7 | - | - | - | - | - | - | - |
| LAND AVE | 777 | 37.6 | 59.3 | 58.5 | 20.4 | 46.7 | 54.6 | 41 | 18.8 | 51.8 J | 51.1 | 22.8 | 19.2 | 48.1 | 52.6 | 25.7 | 16.9 |
| MARYLAND AVE, FD | 777 | - | - | - | - | - | 53.5 | - | - | - | - | - | - | - | 16.7 | - | - |
| NICHOLS AVE_ID_745 | 745 | 176 | 44.3 | 24.9 | 23.7 | 124 | 45.5 | 17.8 | 14.1 | 186 | 37.3 | 36.5 | 21.9 | 221 | 56.3 | 28.1 | 22 |
| NICHOLS AVE_ID_745, FD | 745 | - | - | - | - | - | 36.5 | - | - | - | - | - | - | - | 51.2 | - | - |
| NICHOLS AVE_ID_746 | 746 | 85.1 | 31.7 | 16 | 11 | 82.8 | 20.2 | 12.1 | 11.7 | 94.3 | 30.4 | 15.4 | 10.6 | 104 | 26.2 | 24.1 | 15.2 |
| NICHOLS AVE_ID_746, FD | 746 | - | - | - | - | - | - | - | - | - | 20.2 | - | - | - | - | - | - |
| THOMAS AVE_ID_756 | 756 | 109 | 42 | 17.5 | 22.9 | 15.4 | 66.3 | 18.4 | 13 | 134 | 43.2 | 19.2 | 13.8 | 181 | 63.3 | 38.9 | 19.5 |
| THOMAS AVE_ID_756, FD | 756 | - | - | - | - | - | 48 | - | - | 120 | - | - | - | - | - | - | - |
| THOMAS ST | 413 | 52.1 | 24.6 | 14.7 | 10.4 | 101 | 34.1 | 14.2 | 13.5 | 78.4 | 34.1 | 17.6 | 13.2 | 93.9 | 53.4 | 13.3 | 22.5 J |
| THOMAS ST, FD | 413 | - | - | - | - | - | - | - | - | 70 | - | - | - | 101 | - | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Zinc (mg/kg) | | | | | | | | | | | | | | | | | |
|---------------------|-------------|--------------|-------|--------|--------|---------|-------|--------|--------|-------|-------|--------|--------|---------|----------|--------|--------|------|-------|
| | | A | | | | | | B | | | | | | C | | | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" |
| & NORTH 58TH ST | 440 | 658 | 508 | 743 | 460 | 740 | 761 | 478 | 495 | 1,010 | 1,330 | 500 | 315 J | 208 | 389 | 553 | 208 | - | - |
| & NORTH 58TH ST, FD | 440 | - | - | - | - | 639 | - | - | - | - | 1,600 | - | - | - | - | - | - | - | - |
| NORTH 59TH ST | 005 | 1,000 | 577 | 344 | 100 | 642 | 830 | 82.6 | 116 J | 621 | 522 | 246 | 191 | 833 | 591 | 301 | 90.4 J | - | - |
| NORTH 59TH ST, FD | 005 | - | - | - | - | - | - | - | 71.7 J | - | - | - | - | - | - | - | 171 J | - | - |
| NORTH 57TH ST | 046 | 688 | 591 | 582 | 121 | 601 | 616 | 550 | 260 | 642 | 684 | 615 | 342 J | 778 | 618 | 287 | 479 | - | - |
| NORTH 57TH ST, FD | 046 | - | - | - | - | 862 | - | - | - | 557 | - | - | - | - | - | - | - | - | - |
| NORTH 31ST ST | 062 | 762 | 892 | 491 | 400 | 1,220 J | 1,210 | 460 | 241 | 776 | 522 | 579 J | 453 | 936 | 587 | 454 | 121 | - | - |
| NORTH 31ST ST, FD | 062 | - | - | - | - | 928 | - | - | - | - | - | - | - | 927 | - | - | - | - | - |
| NORTH 36TH ST | 063 | 973 | 773 | 705 | 244 | 1,650 | 747 | 259 | 526 J | 431 J | 485 | 462 | 303 | 263 | 444 | 402 | 262 | - | - |
| NORTH 36TH ST, FD | 063 | - | - | - | - | - | - | - | 390 | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 869 | 315 | 191 | 300 | 232 | 340 | 231 | 234 | 177 | 418 | 318 | 184 | 168 J | 590 | 279 J | 279 | 410 | - | - |
| NORTH 38TH ST, FD | 869 | - | - | - | - | - | - | - | 392 | - | - | - | - | 445 J | - | - | - | - | - |
| NORTH 32ND ST | 546 | 803 | 1,080 | 826 | 472 | 729 | 860 | 365 | 206 | 265 | 197 | 301 | 384 | 770 J | 1,130 | 447 | 307 | - | - |
| NORTH 32ND ST, FD | 546 | 910 | - | - | - | - | - | - | - | - | - | - | - | 761 | - | - | - | - | - |
| NORTH 32ND ST | 067 | 447 | 298 | 620 | 286 | 333 | 245 | 282 | 272 | 315 | 272 | 324 | 222 | 508 | 399 | 257 | 179 | - | - |
| NORTH 32ND ST, FD | 067 | - | - | - | - | - | - | 282 | - | - | - | - | - | - | - | 276 | - | - | - |
| NORTH 45TH ST | 844 | 1,700 | 873 | 615 | 106 | 203 | 737 J | 765 | 65.2 J | 105 | 79.7 | 863 | 363 | 3,410 J | 27,300 J | 611 | 607 | - | - |
| NORTH 45TH ST, FD | 844 | - | - | - | - | 233 J | - | - | 114 | - | - | - | - | - | - | - | - | - | - |
| NORTH 31ST ST | 070 | 297 | 274 | 185 | 93.4 | 327 | 314 | 253 | 104 | 511 | 386 | 343 | 283 | 544 | 201 | 172 | 136 | - | - |
| NORTH 31ST ST, FD | 070 | - | - | - | - | - | - | - | 690 | - | - | - | - | - | - | - | - | - | - |
| NORTH 34TH ST | 071 | 568 | 461 | 229 | 164 | 394 | 374 | 566 | 451 | 813 | 547 | 384 | 232 | 725 | 1,090 | 308 | 281 | - | - |
| NORTH 34TH ST, FD | 071 | - | - | 171 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 076 | 455 | 602 | 294 | 210 J | 836 | 752 | 322 | 243 | 937 | 503 | 220 | 85.3 | 380 | 329 | 283 | 227 | - | - |
| NORTH 38TH ST, FD | 076 | - | - | - | - | - | - | - | - | - | - | - | - | 393 | - | - | - | - | - |
| NORTH 32ND ST | 081 | 459 | 512 | 229 | 167 | 1,710 | 355 | 144 | 101 | 405 | 374 | 287 | 228 | 302 | 305 | 130 | 87.8 | - | - |
| NORTH 32ND ST, FD | 081 | - | - | - | - | - | - | - | - | - | 362 | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 085 | 304 | 223 | 293 | 345 | 215 | 225 | 358 | 343 | 307 | 219 | 332 | 261 | 362 | 432 | 404 | 155 | - | - |
| NORTH 38TH ST, FD | 085 | - | - | - | - | - | - | - | - | - | - | - | - | 336 | - | - | - | - | - |
| NORTH 32ND ST | 087 | 833 | 472 | 376 | 204 | 3,850 J | 522 | 634 | 540 | 430 | 364 | 278 | 199 | 602 J | 394 | 229 | 304 | - | - |
| NORTH 32ND ST, FD | 087 | - | - | - | - | 6,860 J | - | - | - | - | - | - | - | 585 | - | - | - | - | - |
| NORTH 36TH ST | 563 | 1,800 | 1,500 | 578 | 304 J | 3,370 | 8,940 | 2,400 | 1,410 | 3,440 | 3,480 | 726 | 443 | 747 | 637 | 202 | 348 | - | - |
| NORTH 36TH ST, FD | 563 | - | - | - | 458 J | - | - | - | - | - | - | - | 500 | - | - | - | - | - | - |
| NORTH 36TH ST | 097 | 143 | 228 | 522 | 426 | 309 | 1,130 | 568 | 517 | 341 | 378 | 519 | 608 | 595 | 497 | 241 | 287 | - | - |
| NORTH 36TH ST, FD | 097 | - | - | 552 | - | - | - | - | - | 577 | - | - | - | - | - | - | - | - | - |
| NORTH 32ND ST | 098 | 1,300 J | 1,810 | 544 | 340 | 665 | 586 | 390 | 186 | 572 | 502 | 460 | 105 | 507 | 435 | 239 | 231 | - | - |
| NORTH 32ND ST, FD | 098 | 1,520 | - | - | - | - | - | - | - | 481 | - | - | - | - | - | - | - | - | - |
| NORTH 34TH ST | 099 | 355 | 328 | 314 | 122 | 325 | 615 | 296 | 174 | 435 | 480 | 282 | 286 | 461 | 457 | 456 | 279 | - | - |
| NORTH 34TH ST, FD | 099 | - | - | - | - | 359 | - | - | - | - | - | - | - | 460 | - | - | - | - | - |
| NORTH 31ST ST | 101 | 436 | 400 J | 227 | 160 | 370 | 418 | 310 | 192 | 1,330 | 5,200 | 9,540 | 6,050 | 707 | 344 | 234 | 222 | - | - |
| NORTH 31ST ST, FD | 101 | - | - | - | - | 382 | - | - | - | 5,860 | - | - | - | - | - | - | - | - | - |
| NORTH 41ST ST | 843 | 400 | 316 | 274 | 201 | 685 | 679 | 743 | 430 | 861 | 1,210 | 942 | 416 | 1,940 | 2,090 | 1,010 | 810 | - | - |
| NORTH 41ST ST, FD | 843 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 496 | - | - |
| NORTH 34TH ST | 571 | 398 | 460 | 489 | 571 | 348 | 248 | 193 | 161 | 280 | 319 | 182 | 206 | 366 | 309 | 180 | 125 | - | - |
| NORTH 34TH ST, FD | 571 | 416 | - | - | - | - | 217 | - | 281 | - | - | - | - | 356 | - | - | - | - | - |
| NORTH 31ST ST | 106 | 515 | 482 | 327 | 232 | 1,230 | 637 | 1,470 | 2,250 | 731 | 553 | 227 J | 156 | 342 | 244 | 183 | 145 | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| | | Zinc (mg/kg) | | | | | | | | | | | | | | | | | | | |
|-------------------|-------------|--------------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|--------|-------|-------|---------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | | E | | | |
| Property Address | Property ID | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 31ST ST, FD | 106 | | | | | 964 | | | | | | 216 | | | | | | | | | |
| NORTH 34TH ST | 574 | 349 | 473 | 646 | 595 | 545 | 990 J | 423 | 385 | 355 | 546 | 242 | 197 | 396 | 302 | 222 | 120 | - | - | - | - |
| NORTH 34TH ST, FD | 574 | - | - | - | - | 689 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 116 | 119 | 190 | 131 | 491 | 456 | 292 J | 253 | 319 | 348 | 351 | 225 | 293 | 244 | 431 | 711 | 2,140 | - | - | - | - |
| NORTH 38TH ST, FD | 116 | - | - | - | - | 944 J | - | - | - | - | 510 | - | - | - | - | - | - | - | - | - | - |
| NORTH 36TH ST | 120 | 397 | 507 | 702 J | 639 | 395 | 860 | 1,280 | 929 | 226 | 307 | 211 J | 199 | 320 | 1,400 | 327 | 333 | - | - | - | - |
| NORTH 36TH ST, FD | 120 | - | - | 978 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 44TH ST | 820 | 314 | 266 | 924 | 1,920 | 336 | 181 | 620 | 975 | 406 | 3,140 | 1,090 | 2,920 | 326 | 581 | 6,580 | 1,290 | - | - | - | - |
| BELT AVE | 591 | 350 J | 339 | 385 | 260 | 302 | 337 | 411 | 321 | 296 | 384 | 429 | 347 | 287 J | 418 | 403 | 289 | - | - | - | - |
| BELT AVE, FD | 591 | 346 | - | - | - | - | - | - | 323 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 35TH ST | 135 | 1,080 | 706 | 582 | 391 | 1,350 | 969 | 472 | 381 | 1,220 | 1,660 | 1,130 | 1,040 | 1,830 | 2,560 | 6,640 | 2,990 | - | - | - | - |
| NORTH 35TH ST, FD | 135 | - | - | - | - | - | - | - | - | - | - | 1,060 | - | 1,750 | - | - | - | - | - | - | - |
| NORTH 37TH ST | 138 | 481 J | 701 | 691 | 693 | 620 | 615 | 716 | 594 | 5,820 | 1,530 | 28,300 | 5,920 | 745 | 1,230 | 1,580 J | 1,660 | - | - | - | - |
| NORTH 37TH ST, FD | 138 | - | - | - | - | - | - | - | - | - | - | - | - | 869 | 1,520 | - | - | - | - | - | - |
| NORTH 40TH ST | 852 | 459 | 478 | 642 | 577 | 471 | 726 | 585 | 429 | 480 | 583 | 646 | 466 | 701 | 607 | 401 | 151 | - | - | - | - |
| NORTH 40TH ST, FD | 852 | 507 | - | - | - | - | 653 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 38TH ST | 152 | 335 | 294 | 344 | 355 | 276 | 273 | 259 | 327 | 310 | 273 | 300 | 333 | 421 | 389 | 359 | 211 | - | - | - | - |
| NORTH 38TH ST, FD | 152 | 302 | - | - | - | - | - | - | - | - | - | - | - | 426 | - | - | - | - | - | - | - |
| NORTH 39TH ST | 153 | 348 | 671 | 423 | 290 | 473 | 658 | 478 | 388 | 365 | 529 | 466 | 304 | 555 | 717 | 439 | 179 | - | - | - | - |
| NORTH 39TH ST, FD | 153 | - | - | - | - | - | 491 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 39TH ST | 157 | 224 | 422 | 606 | 597 | 393 J | 122 | 568 | 572 | 492 | 510 | 500 | 457 | 473 | 489 | 544 | 313 | - | - | - | - |
| NORTH 39TH ST, FD | 157 | - | - | - | 568 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 40TH ST | 911 | 837 | 573 | 389 J | 363 | 556 | 518 | 319 | 239 | 598 | 546 | 524 | 312 | 890 | 5,420 | 1,190 | 673 | - | - | - | - |
| NORTH 40TH ST, FD | 911 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 44TH ST | 817 | 14,900 | 1,570 | 966 | 868 | 2,270 | 1,380 | 1,120 | 781 | 2,450 | 1,110 | 986 | 502 | 2,810 | 1,620 | 794 | 416 | - | - | - | - |
| NORTH 44TH ST, FD | 817 | - | - | - | - | 2,220 | - | - | - | - | 1,170 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 165 | 1,130 | 805 | 215 | 222 | 178 | 164 | 148 | 132 | 169 | 159 | 149 | 164 | 153 | 206 | 123 | 59.7 | - | - | - | - |
| NORTH 62ND ST, FD | 165 | - | - | - | 176 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 166 | 244 | 258 | 165 | 85.2 | 341 | 287 | 295 | 113 | 349 | 199 | 149 | 213 | 155 | 170 | 159 | 128 | 180 | 176 | 149 | 76.5 |
| NORTH 62ND ST, FD | 166 | - | 192 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 190 | - | - | - |
| NORTH 62ND ST | 600 | 329 | 181 | 154 | 69.2 J | 184 | 224 | 63.6 | 57 | 169 | 186 | 125 | 68.9 | 180 | 188 | 136 | 60.4 | - | - | - | - |
| NORTH 62ND ST, FD | 600 | - | - | - | - | - | - | - | - | 188 | - | - | - | - | - | 132 | - | - | - | - | - |
| 3 NORTH 61ST | 171 | 217 | 203 | 199 | 73 | 199 | 231 | 126 | 76.5 | 173 | 244 J | 225 | 77.7 | 193 | 215 | 170 | 74.8 | - | - | - | - |
| 3 NORTH 61ST, FD | 171 | - | 195 | - | - | - | - | - | - | - | - | - | - | - | 215 | - | - | - | - | - | - |
| NORTH 61ST ST | 174 | 124 | 158 | 135 | 106 | 128 | 129 | 162 | 182 | 122 | 141 | 142 | 128 | 168 | 173 | 176 | 135 | - | - | - | - |
| NORTH 61ST ST, FD | 174 | - | - | - | - | - | - | - | - | 116 | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 176 | 146 | 192 | 251 | 194 | 274 | 235 | 214 | 210 | 189 | 256 | 279 | 332 | 240 | 315 | 304 | 291 | - | - | - | - |
| NORTH 61ST ST, FD | 176 | 161 | - | - | - | - | - | - | - | - | - | - | - | 191 | - | - | - | - | - | - | - |
| 2920 NORTH 61ST | 177 | 255 | 288 | 207 | 225 | 271 J | 253 | 156 | 107 | 245 | 245 | 240 | 154 | 281 | 208 | 196 | 152 | - | - | - | - |
| NORTH 61ST ST | 180 | 295 | 342 | 336 | 307 | 295 | 334 | 373 | 336 | 380 | 377 | 356 | 286 | 358 | 315 | 267 | 267 | - | - | - | - |
| NORTH 61ST ST, FD | 180 | - | - | - | - | - | 362 | - | - | - | - | - | - | - | 323 | - | - | - | - | - | - |
| NORTH 61ST ST | 181 | 243 | 249 | 263 | 252 | 182 | 224 | 250 | 229 | 171 | 151 | 204 | 207 | 213 | 187 | 247 | 187 | - | - | - | - |
| NORTH 61ST ST | 183 | 180 | 202 | 248 | 270 | 113 | 87.7 | 232 | 312 | 228 | 178 | 222 | 208 | 259 | 294 | 272 | 197 | - | - | - | - |
| NORTH 61ST ST | 184 | 251 | 161 | 225 | 224 | 84.6 | 121 | 189 | 160 | 110 | 100 | 154 | 232 | 185 | 222 | 241 | 233 | - | - | - | - |
| NORTH 61ST ST, FD | 184 | - | - | - | - | - | 150 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 60TH ST | 186 | 324 | 464 | 199 | 87.7 | 468 | 323 | 245 | 143 | 323 | 332 | 303 | 182 | 302 | 311 | 283 | 109 | - | - | - | - |
| NORTH 60TH ST, FD | 186 | 330 | - | - | - | - | - | - | - | - | - | - | - | - | - | 242 | - | - | - | - | - |
| NORTH 61ST ST | 187 | 119 | 237 | 297 | 168 | 69.6 | 272 | 286 | 190 | 182 | 249 | 240 | 92.4 | - | - | - | - | - | - | - | - |
| NORTH 61ST ST, FD | 187 | - | - | - | - | - | - | - | 204 | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 61ST ST | 188 | 311 J | 335 | 273 | 295 | 200 | 159 | 266 | 244 | 189 | 220 | 225 | 133 | 200 | 179 | 236 | 173 | - | - | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
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 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| | | Zinc (mg/kg) | | | | | | | | | | | | | | | | | | | | |
|---|--|--------------|------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | | E | | | | |
| Property Address | | Property ID | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 61ST ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 63RD ST NORTH 63RD ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 63RD ST NORTH 63RD ST, FD NORTH 62ND ST NORTH 62ND ST, FD NORTH 62ND ST N | | | | | | | | | | | | | | | | | | | | | | |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
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Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| | | Zinc (mg/kg) | | | | | | | | | | | | | | | | | | | |
|-------------------|-------------|--------------|-------|--------|--------|-------|--------|--------|--------|---------|-------|--------|--------|--------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | | E | | | |
| Property Address | Property ID | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| NORTH 63RD ST, FD | 233 | | | | | | 196 | | | | | | | | | | | | | | |
| NORTH 60TH ST | 234 | 342 | 376 | 322 | 316 | 544 | 433 | 277 | 179 | 433 | 384 J | 296 | 141 | 404 | 351 | 203 | 164 | - | - | - | - |
| NORTH 60TH ST, FD | 234 | | | | | | | | | | | | | 375 | | | | | | | |
| NORTH 60TH ST | 235 | 322 | 347 | 266 | 175 | 281 | 315 | 322 | 155 | 362 | 377 | 304 | 202 | 411 | 334 | 215 | 227 | | | | |
| NORTH 60TH ST, FD | 235 | | | | | | 284 | | | | | | | | | | | | | | |
| NORTH 60TH ST | 237 | 166 | 220 | 268 | 245 | 230 | 160 | 329 | 275 | 383 | 379 | 281 | 196 | 326 | 230 | 223 | 148 | | | | |
| NORTH 60TH ST, FD | 237 | | | 268 | | | | | | | | | | 337 | | | | | | | |
| N 61ST ST | 241 | 398 | 346 | 193 | 129 | 290 | 348 | 228 | 268 | 336 | 318 | 276 | 181 | 249 | 311 | 271 | 155 | | | | |
| N 61ST ST, FD | 241 | 404 | | | | | 300 | | | | | | | | | | | | | | |
| NORTH 61ST ST | 243 | 338 | 277 | 167 | 119 | 315 | 234 | 114 | 105 J | 159 | 210 | 215 | 111 | 244 | 247 | 177 | 103 | | | | |
| NORTH 61ST ST, FD | 243 | 335 | | | | | | | | | 218 | | | | | | | | | | |
| NORTH 62ND ST | 246 | 234 | 230 | 152 | 99.7 | 328 | 316 | 210 | 111 | 269 | 267 | 187 | 80.3 | 386 | 270 | 206 | 87 | | | | |
| NORTH 62ND ST, FD | 246 | 272 | | | | | 268 | | | | | | | | | | | | | | |
| NORTH 61ST ST | 252 | 303 | 210 | 187 | 169 | 267 | 196 | 175 | 92.6 | 204 | 234 | 188 | 129 | 265 | 240 | 181 | 142 J | | | | |
| NORTH 61ST ST, FD | 252 | | | | | | | | 87 | | | | | 307 | | | | | | | |
| NORTH 61ST ST | 608 | 336 J | 255 | 169 | 152 | 328 | 263 | 158 | 153 | 270 | 221 | 206 | 110 | 310 | 195 | 191 | 107 | | | | |
| NORTH 61ST ST, FD | 608 | 309 | | | | | | | | 265 | | | | | | | | | | | |
| NORTH 62ND ST | 257 | 227 | 284 | 336 | 320 | 125 | 175 | 287 | 261 | 179 | 216 | 242 | 219 | 167 | 179 | 146 | 75.2 | | | | |
| NORTH 62ND ST, FD | 257 | | | | | 127 | | | | | | | | | 197 | | | | | | |
| NORTH 62ND ST | 259 | 138 | 225 | 299 | 222 | 152 | 211 J- | 236 | 232 | 111 | 141 | 224 | 209 | 152 | 188 J | 213 J | 130 J | | | | |
| NORTH 62ND ST, FD | 259 | | | | | | | | | | 117 | | | | | | | | | | |
| NORTH 61ST ST | 263 | 255 | 349 | 356 | 219 | 330 | 384 | 234 | 171 | 210 | 279 | 242 | 233 | 314 | 192 | 233 | 104 | | | | |
| NORTH 61ST ST, FD | 263 | | | | | 271 | | | | | | | | | 259 | | | | | | |
| NORTH 61ST ST | 266 | 374 | 342 | 310 | 184 | 338 | 279 | 209 | 257 | 332 | 314 | 240 | 191 | 284 | 317 | 213 | 262 | | | | |
| NORTH 61ST ST, FD | 266 | | | | | 350 | | | | 329 | | | | | | | | | | | |
| NORTH 61ST ST | 268 | 403 | 342 | 177 | 111 | 208 | 440 | 256 | 194 | 235 | 326 | 219 | 186 | 341 J- | 319 | 250 | 236 | | | | |
| NORTH 61ST ST, FD | 268 | | | | | | | | | 335 | | | | | | | | | | | |
| NORTH 63RD ST | 270 | 361 | 342 | 241 | 89.3 | 265 | 228 | 182 | 83.3 | 219 J | 199 | 199 | 82.8 | 436 | 251 | 190 | 161 J | | | | |
| NORTH 63RD ST, FD | 270 | | | 316 | | | | | | | | | | | | | 285 J | | | | |
| NORTH 61ST ST | 274 | 320 | 311 | 276 | 132 | 248 | 246 | 201 | 105 | 283 | 243 | 182 | 120 | 273 | 262 | 166 | 133 | | | | |
| NORTH 61ST ST, FD | 274 | | | | | 240 | | | | | | | | | | | | | | | |
| NORTH 59TH ST | 276 | 210 | 302 | 148 | 94.9 | 365 | 330 | 119 | 90.4 | 275 | 281 | 140 | 171 | 187 | 209 J | 107 | 65 | | | | |
| NORTH 59TH ST, FD | 276 | | 290 | | | | | | | 298 | | | | | 208 | | | | | | |
| NORTH 61ST ST | 279 | 323 | 276 | 254 | 129 | 358 | 256 | 191 | 162 | 319 J | 232 | 127 | 92.6 | 278 | 274 | 182 | 74.6 | | | | |
| NORTH 61ST ST, FD | 279 | | 309 | | | | | | | | | | | | | 183 | | | | | |
| NORTH 60TH ST | 290 | 172 | 264 | 218 | 227 | 163 | 187 | 197 | 200 | 194 | 225 | 181 | 133 | 171 | 214 | 207 | 124 | | | | |
| NORTH 60TH ST, FD | 290 | | | | | | 189 | | | | | | | | | | | | | | |
| NORTH 60TH ST | 292 | 234 | 179 | 206 | 237 | 244 | 235 | 245 | 246 | 263 | 266 | 266 | 196 | 284 | 281 | 186 | 71.7 | | | | |
| NORTH 60TH ST, FD | 292 | | | | | | | | | 277 | | | | | | | | | | | |
| NORTH 62ND ST | 297 | 170 | 214 | 274 | 204 | 169 | 241 | 202 | 302 | 324 | 367 | 259 | 253 | 247 | 329 | 222 | 204 | | | | |
| NORTH 62ND ST, FD | 297 | 148 | 222 | | | | | | | | | | | | | | | | | | |
| NORTH 62ND ST | 299 | 371 | 536 | 331 | 193 | 331 | 403 | 241 | 212 | 268 | 298 | 331 | 227 | 305 | 281 | 346 | 250 | | | | |
| NORTH 62ND ST, FD | 299 | 321 | | | | | | | | | | | | | | | | | | | |
| MAPLE AVE | 766 | 1,290 | 5,270 | 1,490 | 2,150 | 1,720 | 2,240 | 1,490 | 1,570 | 813 | 673 | 615 | 910 | 1,240 | 1,330 | 2,520 | 1,560 | | | | |
| MAPLE AVE, FD | 766 | 1,190 | | | | | | | | | | | | 1,200 | | | | | | | |
| MAPLE AVE | 767 | 1,030 | 2,050 | 3,770 | 800 | 945 | 4,800 | 1,160 | 2,890 | 2,100 J | 793 | 976 | 519 | 690 | 959 | 1,380 | 2,000 | | | | |
| MAPLE AVE, FD | 767 | 1,070 | | | | | | | | | | | | | | | | | | | |
| MAPLE AVE | 309 | 964 | 458 | 329 | 286 | 811 | 945 | 99.1 | 87.3 | 541 | 1,200 | 254 | 268 | 399 | 324 | 304 | 264 J | | | | |
| MAPLE AVE, FD | 309 | 769 J | | | | 941 | | | | | | | | | 264 | | | | | | |
| MAPLE AVE | 310 | 284 | 184 | 186 | 225 | 324 | 242 | 206 | 322 | 225 | 272 | 279 | 378 | 578 | 371 | 701 | 408 | | | | |

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Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| | | Zinc (mg/kg) | | | | | | | | | | | | | | | | | | | |
|---------------------|-------------|--------------|---------|--------|--------|---------|--------|--------|--------|-------|-------|--------|---------|-------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | | E | | | |
| Property Address | Property ID | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| MAPLE AVE, FD | 310 | - | - | - | - | - | - | - | - | 236 | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 618 | 407 | 336 | 232 | 176 | 604 | 1,160 | 328 | 283 | 541 | 630 | 396 | 450 | 623 | 728 | 280 | 268 | - | - | - | - |
| MAPLE AVE, FD | 618 | 410 | - | - | - | - | 959 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 312 | 191 | 227 | 70.3 | 157 | 352 | 209 | 151 | 97.2 J | 362 | 247 | 221 | 195 | 276 | 3,340 | 296 | 297 J | - | - | - | - |
| NORTH 62ND ST, FD | 312 | - | - | - | - | 276 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 619 | 888 | 1,020 | 1,310 | 922 | 986 | 1,140 | 2,140 | 858 | 1,160 | 1,100 | 1,440 | 1,390 | 1,810 | 950 | 1,200 | 1,290 | - | - | - | - |
| MAPLE AVE, FD | 619 | - | - | - | - | - | - | - | - | - | - | - | - | 2,150 | 986 | - | - | - | - | - | - |
| MAPLE AVE | 317 | 445 | 708 | 535 | 420 | 470 | 686 | 526 | 309 | 699 | 548 | 430 J | 343 | 1,460 | 735 | 528 | 720 | - | - | - | - |
| MAPLE AVE, FD | 317 | - | - | - | - | - | - | - | - | 483 | 505 | - | - | - | - | - | - | - | - | - | - |
| NORTH 62ND ST | 319 | 240 | 268 | 238 | 112 | 338 J | 270 | 206 | 124 | 211 | 232 | 159 | 105 | 248 | 237 | 181 | 136 | - | - | - | - |
| NORTH 62ND ST, FD | 319 | - | - | - | - | - | 290 | - | - | - | - | - | - | - | - | - | 95.4 | - | - | - | - |
| NORTH 62ND ST | 320 | 277 | 213 | 196 | 170 | 310 | 273 | 203 | 258 | 338 | 289 | 215 | 116 | 475 | 372 | 251 | 106 | - | - | - | - |
| NORTH 62ND ST, FD | 320 | 277 | - | - | - | - | - | - | - | - | - | - | - | 447 | - | - | - | - | - | - | - |
| MAPLE AVE | 323 | 535 | 667 | 775 | 725 | 672 | 530 | 604 | 529 | 481 | 553 | 470 | 376 | 798 | 841 | 876 | 521 | - | - | - | - |
| MAPLE AVE, FD | 323 | - | 672 | - | 660 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 324 | 1,720 | 522 | 4,750 | 1,890 | 493 J | 1,050 | 1,460 | 500 | 1,910 | 4,060 | 735 | 973 | 1,190 | 4,310 | 1,850 | 1,820 | - | - | - | - |
| MAPLE AVE, FD | 324 | - | - | 3,830 | 1,790 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 325 | 638 | 437 | 370 | 1,320 | 445 | 449 | 384 | 799 | 421 | 414 J | 1,200 | 544 | 635 | 605 | 1,410 | 955 | - | - | - | - |
| MAPLE AVE, FD | 325 | - | - | - | - | - | - | - | - | 564 | 426 | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 326 | 2,880 | 2,160 | 2,810 | 6,510 | 1,180 | 11,400 | 3,530 | 4,130 | 2,240 | 1,730 | 4,470 | 1,020 | 1,250 | 2,090 | 2,980 | 1,260 | - | - | - | - |
| MAPLE AVE, FD | 326 | - | - | - | - | 1,200 | 14,900 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 859 | 252 | 239 | 473 | 1,940 | 250 | 109 | 160 | 556 | 174 | 106 | 198 | 164 J | 261 | 344 | 558 | 658 | - | - | - | - |
| MAPLE AVE, FD | 859 | - | - | - | - | 341 | - | - | 207 | - | - | - | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 329 | 495 | 251 | 297 | 545 | 392 | 200 | 573 | 2,130 | 340 | 263 | 2,050 | 1,250 | 294 | 171 | 403 | 852 | - | - | - | - |
| COLLINSVILLE RD, FD | 329 | - | - | - | - | - | - | - | 2,230 | - | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 330 | 1,780 J | 1,690 J | 843 J | 168 J | 552 J | 582 J | 219 J | 123 | 404 | 368 | 671 | 450 | 310 | 395 | 311 | 132 | - | - | - | - |
| COOKSON RD, FD | 330 | - | - | - | - | - | - | - | 396 | - | - | - | - | - | - | - | - | - | - | - | - |
| MAPLE AVE | 910 | 321 | 463 | 524 | 317 | 238 | 149 J | 625 J | 818 J | 135 J | 152 J | 469 J | 1,060 J | 830 J | 957 J | 737 J | 696 J | - | - | - | - |
| MAPLE AVE, FD | 910 | - | - | - | - | 229 | - | - | - | - | - | - | - | 973 J | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 866 | 196 | 317 | 267 | 138 | 513 J | 1,090 | 448 | 136 | 581 | 551 | 750 | 220 | 657 | 470 | 330 | 176 | - | - | - | - |
| COLLINSVILLE RD, FD | 866 | - | - | - | - | - | - | - | 153 | - | - | - | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 909 | 881 | 672 | 532 | 266 | 625 | 562 | 414 | 229 | 468 | 443 | 284 | 249 | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD, FD | 909 | - | - | - | - | - | - | - | 431 | - | - | - | - | - | - | - | - | - | - | - | - |
| LOCUST ST | 908 | 2,560 | 671 | 347 | 832 | 443 | 1,000 | 994 | 291 | 335 | 601 | 277 | 155 | 843 | 770 | 584 | 264 | - | - | - | - |
| LOCUST ST, FD | 908 | - | - | - | - | - | 1,090 | - | - | - | - | - | - | 920 | - | - | - | - | - | - | - |
| COOKSON RD | 846 | 1,170 | 3,630 | 932 | 1,560 | 3,140 J | 1,630 | 6,220 | 12,500 | 1,210 | 726 | 954 | 354 | 5,640 | 3,860 | 1,680 | 277 | - | - | - | - |
| COOKSON RD, FD | 846 | - | - | - | - | - | 1,370 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 821 | 751 | 704 | 252 | 223 | 686 J | 578 | 277 | 179 | 1,280 | 1,160 | 416 | 197 | 366 | 561 | 657 | 261 | - | - | - | - |
| COOKSON RD, FD | 821 | - | - | - | - | 739 | - | - | - | - | - | - | - | 583 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 811 | 238 | 159 | 936 | 1,640 | 173 | 184 | 299 | 130 | 168 | 1,080 | 306 | 317 | 94.9 | 515 | 438 | 119 | - | - | - | - |
| COLLINSVILLE RD, FD | 811 | - | - | - | - | 260 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 819 | 272 | 1,700 | 15,100 | 457 | 124 J | 90 | 782 | 777 | 221 | 222 | 2,210 | 7,410 | 282 | 478 | 554 | 839 | - | - | - | - |
| COOKSON RD, FD | 819 | - | - | - | - | - | 1,100 | - | - | - | - | - | - | - | - | 728 | - | - | - | - | - |
| COOKSON RD | 812 | 277 | 590 | 818 | 1,100 | 403 | 468 | 932 | 603 | 423 | 422 | 892 | 347 | 366 | 478 J | 2,040 | 625 | - | - | - | - |
| COOKSON RD, FD | 812 | - | - | - | - | - | - | - | - | - | - | - | - | 565 | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 825 | 1,440 | 1,290 | 629 | 245 | 1,870 | 1,720 | 3,420 | 1,360 | 1,040 | 1,230 | 1,080 | 1,970 | 728 | 653 | 1,860 | 10,900 | - | - | - | - |
| COLLINSVILLE RD | 845 | 1,710 | 1,310 | 1,390 | 1,320 | 1,850 | 1,400 | 1,330 | 919 | 2,110 | 1,420 | 1,210 | 784 | 1,350 | 1,370 | 1,220 | 811 | - | - | - | - |
| COLLINSVILLE RD, FD | 845 | - | - | - | - | 1,890 | - | - | - | - | - | - | - | 1,370 | - | - | - | - | - | - | - |
| DELMAR AVE | 352 | 590 | 441 | 364 | 283 J | 610 | 481 | 445 | 320 | 466 | 809 | 536 | 420 | 728 | 583 | 520 | 310 | - | - | - | - |
| DELMAR AVE, FD | 352 | - | - | - | - | - | - | - | - | - | - | - | - | 765 | - | - | - | - | - | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Zinc (mg/kg) | | | | | | | | | | | | | | | | | |
|------------------------|-------------|--------------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|------|-------|
| | | A | | | | | | B | | | | | | C | | | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" |
| INDER DR | 769 | 1,040 | 698 | 263 | 115 | 742 | 661 | 434 | 109 J | 1,830 | 825 | 355 | 189 | 859 | 642 | 314 | 134 | - | - |
| INDER DR, FD | 769 | - | - | - | - | - | 710 | - | - | - | - | - | - | - | - | - | - | - | - |
| HOMAS AVE | 827 | 538 | 997 | 331 | 554 | 607 J | 501 | 301 | 182 | 377 | 608 | 395 | 180 | 464 J | 481 J | 264 | 93.2 | - | - |
| HOMAS AVE, FD | 827 | - | - | - | - | - | 498 | - | - | - | - | - | - | - | 752 J | - | - | - | - |
| HOMAS AVE | 900 | 417 | 490 | 371 | 147 | 363 | 320 | 351 | 421 | 626 | 533 | 264 | 134 | 530 | 502 | 228 | 150 | - | - |
| HOMAS AVE, FD | 900 | - | - | - | - | 375 | - | 348 | - | - | - | - | - | 706 | - | - | - | - | - |
| INDER DR | 367 | 766 | 502 | 433 | 391 | 456 | 396 | 400 | 251 | 412 | 337 | 253 | 176 | 360 | 402 | 321 | 214 | - | - |
| INDER DR, FD | 367 | - | - | - | - | - | - | - | - | 434 | - | - | - | - | - | - | 239 | - | - |
| ARYLAND AVE | 653 | 367 | 275 | 337 | 297 | 488 | 573 | 307 | 141 | 671 | 872 | 833 | 653 J | 369 | 582 | 628 | 399 | - | - |
| ARYLAND AVE, FD | 653 | 368 | - | - | - | - | 567 | - | - | - | - | - | - | - | - | - | - | - | - |
| INDER DR | 378 | 394 | 557 | 511 | 362 J | 385 | 441 | 528 | 356 | 583 | 593 | 430 | 404 | 986 | 791 | 693 | 415 | - | - |
| INDER DR, FD | 378 | - | - | - | - | - | - | - | - | - | - | - | - | 611 | - | - | - | - | - |
| ARYLAND AVE | 384 | 339 | 300 | 1,500 | 1,080 | 457 | 303 | 293 | 254 | 897 | 711 | 873 | 613 | 249 | 197 | 330 | 376 | - | - |
| ARYLAND AVE, FD | 384 | - | - | - | - | - | - | - | - | 821 | - | - | - | - | 250 | - | - | - | - |
| OLLINSVILLE RD | 388 | 1,300 | 1,030 | 318 | 717 | 361 | 175 | 73.8 | 73.3 | 1,100 | 1,250 | 697 | 417 | 743 | 1,100 | 1,150 | 490 | - | - |
| OLLINSVILLE RD, FD | 388 | - | - | - | - | - | - | - | - | 1,340 | - | - | - | - | - | - | - | - | - |
| ILL AVE | 660 | 440 | 318 | 544 | 99.9 | 253 | 371 | 682 | 461 | 615 | 368 | 151 | 95.4 | 710 | 680 | 325 | 165 | - | - |
| ILL AVE, FD | 660 | - | - | - | - | 362 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| OLLINSVILLE RD | 389 | 461 | 483 | 317 | 576 | 562 | 654 | 957 | 555 | 290 | 393 J | 552 | 331 | 784 | 558 | 746 | 1,010 | - | - |
| OLLINSVILLE RD, FD | 389 | - | - | - | - | - | - | - | - | 427 | - | - | - | - | - | - | - | - | - |
| OLLINSVILLE RD | 392 | 2,460 | 603 | 1,520 | 312 | 450 | 466 | 742 | 408 | 687 | 523 | 349 | 1,840 | 984 | 752 | 377 | 1,320 | - | - |
| OLLINSVILLE RD, FD | 392 | - | 925 J | - | - | - | - | - | - | - | - | 377 | - | - | - | - | - | - | - |
| OLLINSVILLE RD | 395 | 374 | 403 | 259 | 110 | 391 | 379 | 222 | 318 | 358 | 348 | 229 | 7.4 U | 376 | 343 | 167 | 97.3 | - | - |
| OLLINSVILLE RD, FD | 395 | - | - | - | - | - | 315 | - | - | - | - | - | - | - | 336 | - | - | - | - |
| OLLINSVILLE RD | 396 | 250 | 240 | 238 | 80.4 | 262 | 246 | 217 | 120 | 257 | 218 | 143 | 100 | 276 | 239 J | 167 | 114 | - | - |
| OLLINSVILLE RD, FD | 396 | - | - | - | - | - | - | - | - | - | - | - | - | - | 241 | - | - | - | - |
| OLLINSVILLE RD | 398 | 307 | 216 | 136 | 231 | 299 | 209 | 193 | 191 | 238 | 311 | 407 | 260 | 290 | 280 | 231 | 125 | - | - |
| OLLINSVILLE RD, FD | 398 | - | - | - | - | - | - | - | - | - | - | - | - | - | 325 | - | - | - | - |
| OLLINSVILLE RD | 662 | 159 | 86.9 | 74.3 | 189 | 247 | 124 | 182 | 302 | 487 | 414 | 257 | 91.6 | 261 | 278 J | 186 | 150 | - | - |
| OLLINSVILLE RD, FD | 662 | - | - | - | - | - | - | - | - | 464 | - | - | - | - | - | - | - | - | - |
| MARYLAND AVE | 777 | 224 | 516 | 541 | 134 | 396 | 470 | 367 | 115 | 435 J | 456 | 139 | 110 | 402 | 470 | 220 | 114 | - | - |
| MARYLAND AVE, FD | 777 | - | - | - | - | - | 454 | - | - | - | - | - | 105 | - | - | - | - | - | - |
| NICHOLS AVE_ID_745 | 745 | 464 | 457 | 532 | 421 | 593 | 569 | 538 | 218 | 739 | 696 | 477 | 170 | 835 | 683 | 571 | 255 | - | - |
| NICHOLS AVE_ID_745, FD | 745 | - | - | - | - | - | 540 | - | - | - | - | - | - | - | 660 | - | - | - | - |
| NICHOLS AVE_ID_746 | 746 | 412 | 427 | 286 | 108 | 522 | 532 | 291 | 84.7 | 473 | 440 | 400 | 119 | 484 | 543 | 413 | 97.4 | - | - |
| NICHOLS AVE_ID_746, FD | 746 | - | - | - | - | - | - | - | - | 536 | - | - | - | - | - | - | - | - | - |
| THOMAS AVE_ID_756 | 756 | 516 | 442 | 241 | 172 | 91.5 | 399 | 254 | 94 J | 533 | 437 | 326 | 143 | 14,200 | 484 | 479 | 195 | - | - |
| THOMAS AVE_ID_756, FD | 756 | - | - | - | - | - | 395 | - | - | 523 | - | - | - | - | - | - | - | - | - |
| THOMAS ST | 413 | 287 | 369 | 307 | 91.7 | 338 | 359 | 343 | 155 | 385 | 379 J | 320 | 124 | 404 | 400 | 148 | 434 | - | - |
| THOMAS ST, FD | 413 | - | - | - | - | - | - | - | - | 372 | - | - | - | 400 | - | - | - | - | - |

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

| | | Arsenic (mg/kg) | | | | | | | | | | | | | | | | | | | |
|------------------|-------------|-----------------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|
| Property Address | Property ID | A | | | | B | | | | C | | | | D | | | | E | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| ALLEYWAY 01 | A01 | 19.6 | 8 | 6.6 | 7.1 | 12.1 | 43.2 | 9.4 | 7.5 | 7.4 | 12.7 | 12.3 | 11 J | 7.2 | 11 J | 17.8 | 17.6 J | - | - | - | - |
| ALLEYWAY 01, FD | A01 | - | - | - | - | - | - | 10.2 | - | - | - | - | - | - | - | - | 11.6 J | - | - | - | - |
| ALLEYWAY 03 | A03 | 18.3 | 31.3 | 20.8 | 7.5 | 12.9 | 71.6 J | 6 | 6 | 21.8 | 16.9 | 8.5 | 5 | 14.7 | 16.3 | 9.9 | 6.8 | 12.8 | 9.3 | 8.2 | 8 |
| ALLEYWAY 03, FD | A03 | - | - | - | - | - | 33.6 J | - | - | 16.3 | - | - | - | 14.5 | - | - | - | - | - | - | - |
| ALLEYWAY 04 | A04 | 13.2 | 12.8 | 14.6 | 10.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05 | A05 | 6.9 | 12 | 11.8 | 6.6 | 6.1 | 9.8 | 11.7 | 7.6 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05, FD | A05 | - | 13.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06 | A06 | 14.3 | 23.4 | 21 | 14.3 | 15.2 | 20.8 | 14.9 | 16.1 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06, FD | A06 | - | - | - | - | - | - | 12.4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 07 | A07 | 13 | 7.1 | 6.9 | 6.5 | 19.4 | 17.3 | 6.6 | 6.4 | 7.1 | 55.8 | 5.9 | 5.1 | 17.3 | 32.2 | 8.8 J | 4.9 | - | - | - | - |
| ALLEYWAY 07, FD | A07 | 10.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 08 | A08 | 8.2 | 7.7 | 6 | 6.6 | 23.2 | 21.3 | 7.8 | 6.5 | 19.6 | 17.9 | 24.6 | 6.7 | 18.6 | 14.5 | 13 | 22.3 | - | - | - | - |
| ALLEYWAY 08, FD | A08 | 12.7 | - | - | - | - | - | - | - | 13.8 | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10 | A10 | 6.5 | 24.5 | 22.2 | 7.2 | 17.6 | 43.9 | 54.3 | 10.1 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10, FD | A10 | - | - | - | - | - | 38.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 11 | A11 | 4.6 J | 20.7 | 9.3 | 4.3 | 7.1 | 9 | 64.4 | 6.2 | 43.8 J | 12.4 J | 14.5 J | 7.2 J | 8.7 J | 44 J | 30.8 J | 8.2 J | 9 J | 18.9 J | 10.6 J | 6.6 J |
| ALLEYWAY 11, FD | A11 | - | - | - | - | - | - | - | - | 73.5 J | - | - | - | - | 40.8 J | - | - | - | - | - | - |
| ALLEYWAY 12 | A12 | 12.9 J | 23 J | 14.3 J | 6.8 J | 6.1 J | 17.3 J | 9.3 J | 6.5 J | 7.8 J | 15.5 J | 8 J | 8.2 J | 9.1 J | 7.2 J | 6.3 J | 6.7 J | 6.8 J | 20.5 J | 5.7 J | 6.2 J |
| ALLEYWAY 12, FD | A12 | - | - | 10 J | - | - | - | - | - | - | - | - | - | 14.7 J | - | - | - | - | - | - | - |
| ALLEYWAY 13 | A13 | 14.6 | 13.2 | 6.6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 13, FD | A13 | - | - | 8.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14 | A14 | 8.5 J | 15.5 J | 7.6 J | 7.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14, FD | A14 | - | - | 7.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 15 | A15 | 11.8 J | 11.6 J | 19.5 J | 16.2 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16 | A16 | 9.9 | 28.1 | 13.5 | 9.5 | 8.7 | 19.9 | 6.1 | 5.3 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16, FD | A16 | - | - | - | - | 12.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17 | A17 | 5.7 | 14.5 | 13.9 | 7.7 | 5.8 | 13.7 J | 7.1 | 7.6 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17, FD | A17 | - | - | - | - | - | 6.4 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18 | A18 | 16.8 | 9.3 J | 8 | 8.4 | 16 | 8.3 | 6.9 J | 6.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18, FD | A18 | - | 15.7 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 19 | A19 | 17.3 | 276 | 13 | 8 | 11.6 | 17.4 | 6.9 | 6.9 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 20 | A20 | 4.7 | 17.4 | 7.3 | 6.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21 | A21 | 9 | 7.2 | 7 | 6.4 | 7.4 | 17.1 | 13.7 J | 6.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21, FD | A21 | - | - | - | - | - | - | 6.3 J | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22 | A22 | 21.6 | 11.1 | 8.3 | 8 | 18.9 | 11.2 | 6.6 | 7.9 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22, FD | A22 | - | - | - | - | - | - | 7.9 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 23 | A23 | 10.7 | 11.9 | 7.5 | 8.1 | 24.8 | 38.3 | 14.4 | 6.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 24 | A24 | 18.7 | 11.3 | 6.3 | 6.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25 | A25 | 94 | 17.4 | 8 | 9.3 | 7.3 | 8.9 | 14.1 | 7.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25, FD | A25 | - | - | - | - | 6.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26 | A26 | 10.1 | 26.1 | 9.3 | 25.7 | 7.3 | 17.1 J | 7.1 J | 7.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26, FD | A26 | - | - | - | - | - | 38.5 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 27 | A27 | 16.4 | 10.9 | 9.3 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 9 | A09 | 8.1 | 9.8 | 6.8 | 7.7 | 7.7 | 20.1 | 8.4 | 7 | 5.8 | 63.5 | 9.6 J | 8.1 | - | - | - | - | - | - | - | - |
| ALLEYWAY 9, FD | A09 | - | - | - | - | - | - | - | - | 8.4 | - | - | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

^/- No data for depth interval or sample section

J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

FD - field duplicate

Result equal to or exceeding the cleanup level is shaded

Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleysways
Old American Zinc Plant Superfund Site

| | | Cadmium (mg/kg) | | | | | | | | | | | | | | | | | | | |
|------------------|-------------|-----------------|-------|--------|--------|--------|--------|--------|--------|-------|-------|--------|--------|-------|--------|--------|--------|--------|-------|--------|--------|
| Property Address | Property ID | A | | | | B | | | | C | | | | D | | | | E | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| ALLEYWAY 01 | A01 | 5.3 | 0.81 | 0.61 U | 0.58 U | 2.4 | 2.1 | 0.63 U | 0.59 U | 0.56 | 11.2 | 1.2 | 3 J | 0.95 | 14.2 J | 8 | 5 J | - | - | - | - |
| ALLEYWAY 01, FD | A01 | - | - | - | - | - | - | 0.62 U | - | - | - | - | - | - | - | - | 16.3 J | - | - | - | - |
| ALLEYWAY 03 | A03 | 14.1 | 3.8 | 5.9 | 1.3 | 4.1 | 6.4 J | 1.3 | 1.1 | 7.6 J | 4.5 | 2.2 | 2.7 | 3.7 J | 4.3 | 1.7 | 1.1 | 5.9 | 3.3 J | 6.5 | 1.6 |
| ALLEYWAY 03, FD | A03 | - | - | - | - | - | 4.3 J | - | - | 4.8 J | - | - | - | 6.7 J | - | - | - | - | - | - | - |
| ALLEYWAY 04 | A04 | 11.6 | 9.7 | 5.8 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05 | A05 | 1.8 | 14 | 3.4 | 7.4 | 4 | 8.4 | 13.7 | 6.3 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05, FD | A05 | - | 16.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06 | A06 | 7.9 J | 16.4 | 11.5 | 7.5 | 14.9 | 13.4 | 11.3 | 9.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06, FD | A06 | - | - | - | - | - | - | 11.3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 07 | A07 | 8.2 | 1.4 | 0.26 J | 0.18 J | 13.4 | 12.1 | 2.7 | 1.1 | 1.1 | 8.8 | 2.7 | 1.2 | 8.9 | 3.8 | 2.1 J | 2.1 | - | - | - | - |
| ALLEYWAY 07, FD | A07 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 08 | A08 | 5.7 | 6.4 | 4.7 | 5.2 | 15.4 | 19.6 | 0.93 | 1.7 | 16.1 | 14.7 | 8.2 | 3.7 | 11.3 | 14 | 10.6 | 23.2 | - | - | - | - |
| ALLEYWAY 08, FD | A08 | 7.5 | - | - | - | - | - | - | - | 7.8 | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10 | A10 | 2.6 | 16.2 | 26.1 | 7.8 | 8.4 | 24.6 | 24.7 | 5.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10, FD | A10 | - | - | - | - | - | 33.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 11 | A11 | 1.5 J | 2.6 | 2.1 | 0.68 U | 0.99 | 3.7 | 7.4 | 0.68 U | 8.1 | 11.9 | 10.6 J | 3.1 | 4.1 | 11.7 | 18.2 | 5.4 | 8 | 14.7 | 9.6 | 3.4 |
| ALLEYWAY 11, FD | A11 | - | - | - | - | - | - | - | - | 10.5 | - | - | - | - | 12 | - | - | - | - | - | - |
| ALLEYWAY 12 | A12 | 3.1 | 5.2 | 4 | 3.1 | 1 | 5.1 | 1 | 0.47 J | 0.89 | 11.4 | 2.2 | 0.22 J | 1.3 J | 1.2 | 1.3 | 0.51 | 0.36 J | 4.4 | 1.1 | 0.66 |
| ALLEYWAY 12, FD | A12 | - | - | 3.6 | - | - | - | - | - | - | - | - | - | 6.4 J | - | - | - | - | - | - | - |
| ALLEYWAY 13 | A13 | 32.4 | 38.7 | 1.1 | 2.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 13, FD | A13 | - | - | 1.7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14 | A14 | 2.1 | 36.9 | 2.6 | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14, FD | A14 | - | - | 7.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 15 | A15 | 13.6 | 30.2 | 10.3 | 2.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16 | A16 | 7.4 | 8.1 | 9.6 | 5.7 | 9.9 | 10.5 | 1.7 | 4.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16, FD | A16 | - | - | - | - | 10.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17 | A17 | 0.86 | 5.1 | 2.7 | 0.69 | 3.6 | 2.9 J | 0.15 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17, FD | A17 | - | - | - | - | - | 1.4 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18 | A18 | 10.8 | 6.5 | 2.9 | 0.34 J | 5.2 | 2.4 | 0.24 J | 0.29 J | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18, FD | A18 | - | 6.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 19 | A19 | 14.6 | 8.7 | 2.5 | 3.9 | 6.2 | 4.7 | 1.7 | 0.58 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 20 | A20 | 6.6 | 21.4 | 11.8 J | 0.34 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21 | A21 | 3.6 | 2.3 | 1.2 | 0.25 J | 4.6 | 12.4 | 4.3 | 0.49 J | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21, FD | A21 | - | - | - | - | - | - | 3.1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22 | A22 | 18.6 | 19.2 | 3.3 | 0.95 | 10.9 | 12.1 | 3.9 | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22, FD | A22 | - | - | - | - | - | - | - | 2.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 23 | A23 | 12.1 | 8.8 | 6.8 | 0.41 J | 19.5 | 53.3 | 5.8 | 3.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 24 | A24 | 14 | 9.7 | 0.54 | 0.36 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25 | A25 | 13.6 | 31.7 | 1.5 | 1.1 | 4.7 | 7.9 | 12.5 | 2.6 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25, FD | A25 | - | - | - | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26 | A26 | 17.7 | 15.4 | 1.2 | 12.9 | 4.6 | 20.8 J | 3.4 J | 1.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26, FD | A26 | - | - | - | - | 43.1 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 27 | A27 | 15.1 | 13.1 | 9.4 | 0.7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 9 | A09 | 5.3 | 12.6 | 0.33 J | 0.57 | 3.5 | 15.9 | 1.7 | 3.8 | 5.4 J | 4 | 4.9 J | 0.13 J | - | - | - | - | - | - | - | - |
| ALLEYWAY 9, FD | A09 | - | - | - | - | - | - | - | - | 2.7 J | - | - | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

U - No data for depth interval or sample section

J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

FD - field duplicate

Result equal to or exceeding the cleanup level is shaded

Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

| | | Lead (mg/kg) | | | | | | | | | | | | | | | | | | | |
|------------------|-------------|--------------|-------|--------|--------|--------|---------|--------|--------|---------|-------|--------|--------|--------|--------|---------|--------|--------|-------|--------|--------|
| Property Address | Property ID | A | | | | B | | | | C | | | | D | | | | E | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| ALLEYWAY 01 | A01 | 713 | 30 | 17.4 | 14.1 | 170 | 226 | 19.3 | 15.4 | 52.7 | 916 | 85.9 | 101 J | 73.5 | 302 | 371 | 469 | - | - | - | - |
| ALLEYWAY 01, FD | A01 | - | - | - | - | - | - | 20.4 | - | - | - | - | - | - | - | - | 354 | - | - | - | - |
| ALLEYWAY 03 | A03 | 380 | 792 | 1,250 | 40.6 | 240 | 3,720 J | 41.6 | 26.3 | 243 | 630 | 28.2 | 15.2 | 325 J | 351 | 66.6 | 13 | 269 | 255 J | 32.3 | 15.5 |
| ALLEYWAY 03, FD | A03 | - | - | - | - | - | 1,530 J | - | - | 227 | - | - | - | - | 690 J | - | - | - | - | - | - |
| ALLEYWAY 04 | A04 | 194 | 469 | 484 | 115 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05 | A05 | 28.1 | 483 | 367 | 32 | 148 | 239 | 241 | 203 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05, FD | A05 | - | 583 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06 | A06 | 696 J | 711 | 980 | 1,070 | 410 | 438 | 391 | 383 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06, FD | A06 | - | - | - | - | - | - | 370 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 07 | A07 | 325 | 176 | 14.1 | 13.7 | 497 | 1,210 J | 95.5 | 14.1 | 27 | 317 | 61.6 | 22.6 | 477 | 568 | 340 J | 23.3 | - | - | - | - |
| ALLEYWAY 07, FD | A07 | 360 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 08 | A08 | 192 | 140 | 35.3 | 20.2 | 467 | 624 | 92.1 | 19.7 | 908 | 694 | 273 | 90.9 | 1,100 | 355 | 266 | 641 | - | - | - | - |
| ALLEYWAY 08, FD | A08 | 211 | - | - | - | - | - | - | - | 854 | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10 | A10 | 25 | 979 | 1,560 | 57.6 | 530 | 1,820 | 7,100 | 600 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10, FD | A10 | - | - | - | - | - | 1,510 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 11 | A11 | 56.3 | 1,260 | 205 | 21.2 | 142 | 413 | 8,240 | 47.2 | 2,940 J | 356 J | 427 J | 27.4 J | 330 J | 499 J | 6,940 J | 149 J | 221 J | 326 J | 172 J | 30.5 J |
| ALLEYWAY 11, FD | A11 | - | - | - | - | - | - | - | - | 3,900 J | - | - | - | - | 727 J | - | - | - | - | - | - |
| ALLEYWAY 12 | A12 | 64 J | 455 J | 453 J | 26.3 J | 63.5 J | 341 J | 162 J | 18.3 J | 28.3 J | 583 J | 42.8 J | 17.1 J | 88.7 J | 44.1 J | 20.6 J | 14 J | 18.4 J | 289 J | 27.7 J | 18.5 J |
| ALLEYWAY 12, FD | A12 | - | - | 319 J | - | - | - | - | - | - | - | - | - | - | 766 J | - | - | - | - | - | - |
| ALLEYWAY 13 | A13 | 506 | 299 | 16.1 | 31.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 13, FD | A13 | - | - | 17.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14 | A14 | 24.4 J | 408 J | 53.7 J | 23.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14, FD | A14 | - | - | 49.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 15 | A15 | 970 J | 528 J | 507 J | 105 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16 | A16 | 228 | 877 | 321 | 66.2 | 98 | 235 | 16.7 | 13.9 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16, FD | A16 | - | - | - | - | 96.8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17 | A17 | 13.5 | 101 | 129 | 14.1 | 25.3 | 70.4 J | 13 | 14.2 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17, FD | A17 | - | - | - | - | - | 25.7 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18 | A18 | 176 | 141 | 14.7 | 14 | 100 | 56.3 | 12.7 J | 10.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18, FD | A18 | - | 200 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 19 | A19 | 820 | 6,860 | 229 | 53.8 | 126 | 332 | 13.9 | 11.6 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 20 | A20 | 150 | 384 | 76.6 J | 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21 | A21 | 58.4 | 30.4 | 18.4 | 12.2 | 45.5 | 170 | 27.8 | 13 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21, FD | A21 | - | - | - | - | - | - | 20.2 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22 | A22 | 450 | 175 | 26.4 J | 13.7 | 286 | 106 | 17.2 | 10.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22, FD | A22 | - | - | - | - | - | - | - | 12.8 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 23 | A23 | 581 | 460 | 53.4 | 13.1 | 3,570 | 2,950 | 46.1 | 13.6 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 24 | A24 | 294 | 123 | 15 | 15.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25 | A25 | 522 J | 650 | 77.8 | 34.5 | 88.9 | 110 | 514 | 19.4 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25, FD | A25 | - | - | - | - | 98.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26 | A26 | 358 | 284 | 24.3 | 512 | 122 | 224 J | 28.5 J | 21.3 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26, FD | A26 | - | - | - | - | - | 575 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 27 | A27 | 203 | 178 | 103 | 14.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 9 | A09 | 122 | 141 | 11.4 J | 17.4 | 31.6 | 642 | 64.4 | 21.8 | 158 | 145 | 235 J | 14.3 | - | - | - | - | - | - | - | - |
| ALLEYWAY 9, FD | A09 | - | - | - | - | - | - | - | - | 92.3 | - | - | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

"/ - No data for depth interval or sample section

J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

FD - field duplicate

Result equal to or exceeding the cleanup level is shaded

Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

| | | Zinc (mg/kg) | | | | | | | | | | | | | | | | | | | |
|------------------|-------------|--------------|---------|---------|--------|---------|---------|--------|--------|---------|---------|---------|---------|---------|---------|----------|---------|---------|---------|--------|--------|
| Property Address | Property ID | A | | | | B | | | | C | | | | D | | | | E | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| ALLEYWAY 01 | A01 | 1,980 | 315 | 272 | 81.1 | 405 | 594 | 255 J | 77.2 | 171 | 7,740 | 390 | 952 | 202 | 1,380 | 1,520 | 1,060 J | - | - | - | - |
| ALLEYWAY 01, FD | A01 | - | - | - | - | - | - | 109 J | - | - | - | - | - | - | - | - | 1,560 J | - | - | - | - |
| ALLEYWAY 03 | A03 | 1,280 | 812 | 1,840 | 362 | 540 | 3,380 J | 272 | 270 | 566 | 548 | 189 | 278 | 481 | 775 | 269 | 283 | 1,210 | 481 J | 394 | 375 |
| ALLEYWAY 03, FD | A03 | - | - | - | - | - | 1,650 J | - | - | 577 | - | - | - | 678 | - | - | - | - | - | - | - |
| ALLEYWAY 04 | A04 | 941 | 1,920 | 940 | 612 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05 | A05 | 861 | 1,800 | 984 | 1,170 | 744 | 1,370 | 2,850 | 1,910 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 05, FD | A05 | - | 2,320 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06 | A06 | 3,100 J | 3,000 | 3,080 | 4,420 | 5,500 | 10,800 | 1,770 | 2,500 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 06, FD | A06 | - | - | - | - | - | - | 3,440 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 07 | A07 | 1,950 | 359 | 161 | 98.6 | 6,200 J | 1,680 | 439 | 246 | 146 | 2,340 | 319 | 192 | 1,960 | 743 | 428 J | 320 | - | - | - | - |
| ALLEYWAY 07, FD | A07 | 13,900 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 08 | A08 | 951 | 835 | 739 | 770 | 3,130 | 15,300 | 275 | 875 | 1,820 | 2,080 | 1,170 | 735 | 8,160 | 5,420 | 2,650 | 6,740 | - | - | - | - |
| ALLEYWAY 08, FD | A08 | 1,790 | - | - | - | - | - | - | - | 1,420 | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10 | A10 | 479 | 3,570 | 4,020 | 646 | 2,510 | 7,500 | 14,100 | 1,190 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 10, FD | A10 | - | - | - | - | - | 8,490 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 11 | A11 | 997 | 1,990 | 740 | 191 | 291 | 1,660 | 14,800 | 1,010 | 6,710 J | 9,320 J | 9,920 J | 1,200 J | 1,890 J | 1,930 J | 11,100 J | 921 J | 1,470 J | 1,750 J | 717 J | 517 J |
| ALLEYWAY 11, FD | A11 | - | - | - | - | - | - | - | - | 9,040 J | - | - | - | - | 7,480 J | - | - | - | - | - | - |
| ALLEYWAY 12 | A12 | 413 J | 1,410 J | 1,260 J | 947 J | 301 J | 1,870 J | 273 J | 128 J | 198 J | 4,690 J | 584 J | 146 J | 534 J | 785 J | 267 J | 248 J | 219 J | 1,090 J | 305 J | 597 J |
| ALLEYWAY 12, FD | A12 | - | - | 1,400 J | - | - | - | - | - | - | - | - | - | 3,500 J | - | - | - | - | - | - | - |
| ALLEYWAY 13 | A13 | 2,290 | 2,010 | 187 J | 405 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 13, FD | A13 | - | - | 315 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14 | A14 | 573 J | 3,150 J | 506 J | 572 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 14, FD | A14 | - | - | 845 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 15 | A15 | 5,340 J | 1,920 J | 3,440 J | 822 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16 | A16 | 3,560 | 5,280 | 917 | 332 | 623 | 1,180 | 191 | 755 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 16, FD | A16 | - | - | - | - | 768 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17 | A17 | 222 | 531 | 984 | 257 | 333 | 1,140 J | 87.9 | 192 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 17, FD | A17 | - | - | - | - | - | 319 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18 | A18 | 2,020 | 2,750 J | 490 | 276 | 789 | 375 | 219 J | 110 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 18, FD | A18 | - | 1,430 J | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 19 | A19 | 4,620 | 12,700 | 2,160 | 2,360 | 1,500 | 2,390 | 973 | 54.7 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 20 | A20 | 2,400 | 6,260 | 658 J | 88.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21 | A21 | 587 | 362 | 294 | 201 | 554 | 5,800 | 326 | 246 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 21, FD | A21 | - | - | - | - | - | - | 311 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22 | A22 | 11,300 | 3,170 | 438 J | 591 | 2,730 | 1,590 | 464 | 572 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 22, FD | A22 | - | - | - | - | - | - | 558 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 23 | A23 | 4,580 | 3,740 | 971 | 197 | 13,600 | 16,500 | 1,640 | 964 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 24 | A24 | 6,100 | 1,070 | 134 | 123 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25 | A25 | 4,540 J | 7,090 | 496 | 811 | 1,280 | 678 | 2,160 | 690 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 25, FD | A25 | - | - | - | - | 1,310 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26 | A26 | 1,800 | 3,280 | 497 | 11,500 | 669 | 2,690 | 463 J | 397 | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 26, FD | A26 | - | - | - | - | 2,550 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 27 | A27 | 1,890 | 3,750 | 858 | 150 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLEYWAY 9 | A09 | 1,040 | 5,340 | 149 J | 134 | 552 | 3,580 | 323 | 398 | 1,000 | 870 | 721 J | 72.2 | - | - | - | - | - | - | - | - |
| ALLEYWAY 9, FD | A09 | - | - | - | - | - | - | - | 984 | - | - | - | - | - | - | - | - | - | - | - | - |

Notes:

" - inches below ground surface

"/- No data for depth interval or sample section

J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

FD - field duplicate

Result equal to or exceeding the cleanup level is shaded

Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-5. Laboratory Analytical Results for ENTACT Properties and Alleyways
Old American Zinc Plant Superfund Site

| Property Address | Property ID | Lead (mg/kg) | | | | | | | | | | | | | | | |
|------------------|-------------|--------------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|------|-------|--------|--------|
| | | A | | | | B | | | | C | | | | D | | | |
| | | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" | 0-6" | 6-12" | 12-18" | 18-24" |
| KINGSHIGHWAY | 028C | 501 | 46 | 14 | - | 388 | 44 | 22 | - | - | - | - | - | - | - | - | - |
| ROMAINE CT | 029R | 630 | 58 | 69 | - | 698 | 22 | 81 | - | - | - | - | - | - | - | - | - |
| N 44TH ST | 043R | 475 | 249 | 71 | - | 310 | 329 | 219 | - | - | - | - | - | - | - | - | - |
| N 49TH ST | 077C | 510 | 147 | 18 | - | 404 | 32 | 66 | - | - | - | - | - | - | - | - | - |
| N 45TH ST | 081R | 823 | 471 | 475 | - | 983 | 76 | 100 | - | - | - | - | - | - | - | - | - |
| NSVILLE RD | 095R | 553 | 225 | 55 | - | 330 | 68 | 141 | - | 653 | 100 | 75 | - | 337 | 152 | 70 | - |
| N 43RD ST | 105R | 323 | 139 | 144 | - | 717 | 181 | 95 | - | - | - | - | - | - | - | - | - |
| N 45TH ST | 110C | 364 | 478 | 273 | - | 680 | 209 | 132 | - | 507 | 247 | 239 | - | 870 | 223 | 133 | - |
| N 44TH ST | 123R | 990 | 429 | 403 | - | 534 | 270 | 60 | - | 87 | 63 | 21 | - | 280 | 131 | 62 | - |
| N 45TH ST | 139R | 850 | 397 | 108 | - | 531 | 56 | 40 | - | - | - | - | - | - | - | - | - |
| N 44TH ST | 151R | 524 | 220 | 0 | - | 527 | 139 | 151 | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 152R | 310 | 160 | 114 | - | 499 | 328 | 268 | - | - | - | - | - | - | - | - | - |
| N 44TH ST | 155R | 371 | 260 | 130 | - | 343 | 438 | 194 | - | - | - | - | - | - | - | - | - |
| N 45TH ST | 169R | 233 | 363 | 353 | - | 197 | 284 | 613 | - | - | - | - | - | - | - | - | - |
| N 43RD ST | 181R | 341 | 243 | 200 | - | 423 | 200 | 132 | - | - | - | - | - | - | - | - | - |
| N 45TH ST | 200R | 240 | 440 | 970 | 73 | 282 | 228 | 23 | - | - | 65 | 97 | - | 130 | 85 | 56 | - |
| N 41ST ST | 232R | 197 | 49 | 93 | - | 98 | 145 | 782 | - | - | - | - | - | - | - | - | - |
| N 44TH ST | 234R | 409 | 365 | 435 | - | 477 | 473 | 188 | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 250C | 642 | 632 | 128 | - | 178 | 595 | 216 | - | 335 | 440 | 318 | - | 113 | 947 | 478 | - |
| N 42ND ST | 252R | 91 | 165 | 113 | - | 114 | 415 | 133 | - | - | - | - | - | - | - | - | - |
| N 45TH ST | 259R | 307 | 392 | 139 | - | 686 | 87 | 82 | - | - | - | - | - | - | - | - | - |
| COOKSON RD | 273C | 97 | 79 | 21 | - | 274 | 507 | 336 | - | 62 | 22 | 19 | - | 16 | 0 | 202 | - |
| RD ST | 274C | 101 | 64 | 53 | - | 147 | 639 | 137 | - | - | - | - | - | - | - | - | - |
| N 44TH ST | 282R | 367 | 42 | 14 | - | 408 | 17 | 0 | - | 299 | 163 | 39 | - | 266 | 127 | 76 | - |
| COOKSON RD | 348R | 141 | 122 | 439 | - | 132 | 300 | 64 | - | - | - | - | - | - | - | - | - |
| KINGSHIGHWAY | 358C | 305 | 120 | 0 | - | 457 | 98 | 0 | - | 229 | 14 | 145 | - | 30 | 67 | 174 | - |
| THOMAS AV | 361R | 0 | 61 | 0 | - | 973 | 46 | 60 | - | - | - | - | - | - | - | - | - |
| E AVE | 366R | 114 | 517 | 477 | - | 228 | 510 | 315 | - | - | - | - | - | - | - | - | - |
| COLLINSVILLE RD | 378R | 444 | 171 | 0 | - | 485 | 44 | 25 | - | 334 | 101 | 13 | - | 86 | 88 | 54 | - |
| COLLINSVILLE RD | 398R | 908 | 0 | 0 | - | 583 | 504 | 263 | - | - | - | - | - | - | - | - | - |
| N 52ND ST | 435R | 159 | 212 | 0 | - | 408 | 47 | 50 | - | - | - | - | - | - | - | - | - |
| ND ST | 436R | 271 | 0 | 0 | - | 629 | 151 | 64 | - | - | - | - | - | - | - | - | - |
| N 36TH ST | 439R | 82 | 53 | 136 | - | 172 | 177 | 723 | - | - | - | - | - | - | - | - | - |
| N 52ND ST | 443R | 181 | 159 | 54 | - | 498 | 195 | 23 | - | 255 | 26 | 161 | - | 286 | 0 | 57 | - |
| N 42ND ST | 467R | 123 | 148 | 129 | - | 320 | 438 | 32 | - | - | - | - | - | - | - | - | - |
| Alley AT1-S | AT1-S | 179 | 520 | - | 15 | 437 | 300 | - | 413 | 469 | 752 | - | 5,300 | - | - | - | - |

Notes:

" - inches below ground surface; '-' - No data for depth interval or sample section

mg/kg - milligrams per kilogram

Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 400 mg/kg for lead